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PROLIFERATION ISSUES

JPRS-TND-91-021

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30 December 1991

[This report contains foreign media information on issues related to worldwide proliferation and transfer activities in nuclear, chemical, and biological weapons, including delivery systems and the transfer of weapons-relevant technologies.]

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SOUTH AFRICA

U.S. Ban Highlights Missile Industry Potential

92WP0087A Johannesburg SUNDAY STAR in English
27 Oct 91 p 11

[Article by Brendan Seery: "Is SA's Hand in Israel's Jericho?"]

[Text] The recent United States ban on all trade with Armscor—because it believes South Africa is exporting missile technology to renegade Third World countries—has focused attention again on this country's shadowy military industry.

At the heart of the American concern is their belief—backed by intelligence reports and assessments—that South Africa and Israel are cooperating in developing Intermediate Range Ballistic Missiles (IRBMs).

And the Americans have on a number of occasions fingered South African conglomerates—including giant Barlow Rand—as being involved in illegal smuggling of high-tech components from the U.S. for use in the missile programme.

U.S. intelligence sources have said Armscor is cooperating with Israel to build an IRBM which could deliver nuclear chemical or conventional warheads up to 1500 km with a far greater accuracy than the Scuds used in the Gulf War.

There have reportedly been at least two launches of IRBMs from Armscor's test range at De Hoop near Arniston in the Cape in the past 18 months.

U.S. Central Intelligence Agency sources quoted in U.S. newspaper reports in 1989 said the missiles under development were to be called the Shavit (Hebrew for Comet)—a development of Israel's Jericho II missile.

There has been speculation over the past two years that Armscor may also be involved in a space programme, turning to commercial ways to exploit its military expertise, especially in view of the drastically slashed SADF budget which has virtually halted all military research and development.

In a number of investigations U.S. Customs Department and FBI investigators have detailed the alleged smuggling networks which have been funnelling parts to South Africa.

Special agents working for Customs identified a Johannesburg electronics company, Telcom Industries, as having set up a "front" company in Florida specifically to acquire restricted technology.

According to a sworn affidavit by Customs Special Agent Lawrence O'Donnell—presented to a Florida court, and which is in the possession of the SUNDAY STAR—Telcom's director, Reginald van Rossum, was involved

in smuggling components to South Africa for a period of at least three years up to 1990.

Mr. Van Rossum's front company, York Ltd, operated from Boynton Beach in Florida, acquiring parts from manufacturers across the U.S. Staffers at York were told to tell suppliers that the parts were destined for export to Holland.

False declarations allowed the shipping of restricted goods under "general" licences.

Earlier this month, Mr. van Rossum's secretary at York Ltd, Beverley Barratt, was convicted of assisting in the smuggling operation and sentenced to three year's probation.

In Johannesburg, Telcom Industries personnel have refused to answer any press queries in connection with the York Ltd case, and have also refused to reveal Mr. van Rossum's whereabouts or links to the company.

Agent O'Donnell said bank records showed that there had been 15 monetary wire transfers into York Ltd's bank account in 1990. A total of 12 of these came from Telcom Industries in Johannesburg and represented an amount of \$400,000 (about R1.1 million). Two other transfers came from Fuchs Electronics—a subsidiary of the giant Barlow Rand conglomerate.

The other transfer was from Grinel (Grinaker Electronics) in South Africa.

The latest finger-pointing at Barlow Rand comes in the wake of a number of reports over the past 18 months linking the conglomerate to arms-related sanctions-busting.

The allegations surfaced as part of investigations into the affairs of a former Pennsylvania businessman, James Guerin and his electronics firm, International Signal and Control Corporation (ISC).

Federal investigations in the U.S. earlier this year alleged that ISC subsidiaries, including ISC Education Systems, had been shipping illegally acquired state-of-the-art arms technology (including missile guidance system parts) to South Africa in shipments disguised as "computer based education material for blacks."

The allegations, reported in the INTELLIGENCER JOURNAL newspaper in Lancaster, Pennsylvania (ISC's home base) quoted investigators as saying they had discovered myriad "front" companies.

One investigator remarked: "Every time we kick a rock and we think we are getting to an end eight snakes shoot out and hide under the other eight rocks. Who knows where this will all end?"

Barlows has admitted it had an interest in ISC in the mid 1970s, but that it sold it after only six months, and has no more interest in the company.

Grinaker Electronics' "frequency hopping" radio, produced for Armscor, caused a flurry of interest when it made a debut at an arms fair in Chile in 1984, with JANE'S DEFENCE WEEKLY calling it "among the most advanced available from any manufacturer."

Yesterday Ken Ironside, Barlow Rand's general manager, group public affairs, said: "We have no comment to make except to confirm that Barlows had an interest in ISC in the mid-1970s. That was sold after six months and we have no further interest in that company."

Barlow Rand: Arms Smuggling Charged

92AF0175Z Johannesburg THE WEEKLY MAIL
in English 15-21 Nov 91 pp 2-3

[Article by Gavin Evans: "Barlow Rand Hard Hit by Arms Smuggling Charges"; first paragraph is THE WEEKLY MAIL introduction]

[Text] Conspiracy to provide Saddam Husayn with weapons—that's the charge levelled against several South African companies and their employees, Gavin Evans reports.

South Africa's leading industrial corporation, Barlow Rand Limited, has been hard-hit by a series of charges of involvement in secret arms deals—including allegations that it played a central role in smuggling artillery fuses to Iraq.

Barlow subsidiary Fuchs Electronics (Pty) Limited and its technical director, Jaco Budricks, have been charged in the United States with conspiracy to supply Saddam Husayn with advanced weaponry between 1985 and 1989. Also charged are Armscor [South African Armaments Corporation], its subsidiary Kentron, seven Armscor and Kentron employees, and seven U.S. citizens.

THE WEEKLY MAIL has received information—in addition to the allegations in the indictment—that Fuchs continued to be linked to the arms trade with Iraq at least until the middle of last year.

Commenting on state documents showing that another Barlow Rand subsidiary, Sandock-Austral, was involved in arms deals with Germany for the South African Defence Force [SADF] in the mid-1980s, the company's general manager, group public affairs, Ken Ironside, said Sandock-Austral was only acquired by the Barlow Rand group last year. He would not comment on questions concerning whether Sandock-Austral, Fuchs or other Barlow Rand companies were still involved in arms production or trade.

Fuchs, an East Rand-based company, is listed in the U.S. indictment as being involved in the design and manufacture of "ordnance and explosive devices for Armscor". It manufactures the electronic fuses for most of the bombs, mortars and rockets used by the SADF and also

produces a wide range of radios, including the frequency-hopping radio which has been marketed extensively in the Middle and Far East and Latin America.

The essence of the charges are that Armscor and the International Signals and Control Corp (ISC) collaborated in developing advanced weapons systems both for South African consumption and for marketing to Iraq and China.

Specific charges relating to Barlow Rand include the following:

- Fuchs director Budricks was involved with Armscor officials in establishing front companies for Armscor and "procuring such munitions, military technical data and other commodities necessary for Armscor to design and manufacture fighter aircraft, missiles, helicopters, armoured ground vehicles and ammunition". This technology was then illegally smuggled to South Africa.

- In about 1982 ISC developed a PF-I proximity fuse—"a device designed to enable an explosive warhead to detonate above the target in order to maximise the kill ratio". Four years later it entered into a contract with China to seal these fuses, but problems of premature detonation were experienced in the testing phase. As a result in February 1988 ISC contracted with Fuchs to assist with the fuse problem.

ISC smuggled 5,500 fuse castings ("misrepresented as metal parts") to Darlon Pty Ltd—a front company for Fuchs—"for integration of South African electrical systems". Fifty of these fuses were then smuggled back to the USA for testing.

- In 1988 ISC and Fuchs linked up with the Chilean arms company Industrias Cardoen Limitada, the indictment charges, to produce and market PF-I fuses for the Eastern Bloc and Iraq. The plan involved ISC supplying 300,000 fuses to Fuchs for delivery to a Cardoen subsidiary which would then sell them [to] Iraq. The contract involved Iraq paying Fuchs in crude oil and Fuchs paying \$33 million to ISC. The indictment does not state whether this transaction was concluded.

- Between 1985 and 1989 ISC sold Fuchs \$4.4-million worth of fuse components "to assist Fuchs to fulfill its production requirements with Iraq," according to the indictment. These were needed by Iraq for its G-5 artillery which had earlier been supplied by Armscor. G-5 shells captured by the Americans in the Gulf war contained these U.S.-made parts.

If convicted Fuchs faces a fine of up to \$21.5-million, as well as seizure of its U.S. assets, while Budricks faces up to 235 years imprisonment and a potential fine of \$23.25-million, according to the U.S. Justice Department.

Shortly before the allegations against Fuchs were revealed, THE WEEKLY MAIL was contacted by a

source in the arms industry who said that the company had been involved last year in exporting a shipment of equipment intended for military use to Iraq, but the international blockade against Iraq prevented the equipment from reaching its destination. Barlow Rand refused to comment.

The arms industry source also said that frequency-hopping radios, which had initially been designed by Salbu (Pty) Ltd in Irene, were sold by Armscor to both Iraq and Iran. Salbu founder James Larsen confirmed to THE WEEKLY MAIL that he had designed the frequency-hopping radio, but said that Salbu was now owned by Grinaker Holdings, that he was now retired, and he did not know where the frequency-hopping radio had been marketed.

Much of the research for such projects was done at the University of Pretoria Engineering faculty, and by the Carl and Emily Fuchs Institute of Micro Electronics at the university, the arms industry source said.

Barlow Rand has a long history of central involvement in South Africa's arms industry. It has been supplying the SADF since the early 1960s and by the 1980s was the SADF's major supplier of electronic equipment.

Book on Details of Nuclear Testing With Israel

92WP0087B Cape Town WEEKEND ARGUS
in English 2 Nov 91 p 4

[Article by Jeremy Brooks: "SA 'Tested Nuclear Device'"]

[Text] London—Israeli and South African scientists worked together secretly for nearly three decades to produce a nuclear bomb, testing at least three warheads off the Cape coast during the late Seventies.

Assertions to this effect have been made by senior Washington Journalist Seymour Hersh in Britain and America. His book, "The Samson Option—Israel, America and the Bomb," was released in Washington and here last week.

Hersh, respected as a meticulous and thorough researcher, spent three years interviewing senior American and Israeli officials and scanning previously classified White House papers.

Other revelations in his book, led to the sacking this week of top Fleet Street foreign editor Nicholas Davies, named by Hersh as an arms dealer and agent for Mossad, the Israeli secret service.

The claims of South African involvement in the Israeli nuclear programme have gone unnoticed in the controversy, which has even reached the House of Commons.

Billionaire British publisher Robert Maxwell, also named as having Israeli connections, has issued writs against Hersh and his publishers, Faber and Faber.

Hersh says the South Africans wanted to develop a "low-yield nuclear artillery shell" which could be used if frontline defences were breached and urban centres threatened.

They found a willing ally in Israel whose nuclear programme, based in the reactor plant at Dimona in the Negev, already was well advanced.

The Israelis found themselves alone in 1967 when Charles de Gaulle decided to withdraw clandestine French support at Dimona. They also were unable to conduct a test without alerting the Russians and Americans—whose spy satellites were orbiting—and causing immediate uproar.

The South Africans had, until then, been supplying Dimona with shipments of raw uranium "yellowcake" from which plutonium could be processed in a warren of secret vaults buried deep beneath Dimona.

The deliveries were restricted to 10 tons—too small to require monitoring by the International Atomic Energy Agency.

Hersh quotes arms dealer Mr. Ari Ben-Menashe, who at the time worked in Israel's Ministry of Defence: "The South Africans weren't good at all as a nuclear power; we had to help all the way."

The Americans found out by chance what was happening when a storm over the South Indian Ocean eased momentarily on 22 September 1979.

As the clouds parted a nuclear detection satellite known as Vela picked up two flashes of light.

The flashes were distinctive of a nuclear explosion and had only been picked up before over Lap Nor, where the Red Chinese were conducting test atmospheric explosions.

Hersh says the test was probably conducted on a barge.

Israeli sources told him: "There was a storm and we figured it would block Vela, but there was a gap in the weather—a window—and Vela got blinded by the flash."

They also said that at least two Israeli Navy ships had sailed to the site, with a contingent of Israeli military men and nuclear experts. They were accompanied by the South African Navy, with their own experts.

Three days later, President P.W. Botha, as yet unaware that the blast had been spotted by the Americans, "swaggered" into the Cape National Congress and warned South Africa's enemies: "If there are people who are thinking of doing something else, I suggest they think twice."

"They might find we have military weapons they do not know about."

The Vela sighting caused panic in both Washington and Tel Aviv. "People just stood there," recalled one American official.

"There was sheer panic. It was very much 'Oh dear. What do we do with this?'"

From here, Hersh delves into intrigue. He says many figures in the Carter administration were secretly supportive of the Israeli ambition. It became imperative, he says, for the American president "not to know what there was to know."

In addition, President Carter would harm his re-election campaign, then about to take off, if he offended the Jewish vote.

A month later, Secretary of State Mr. Cyrus Vance told newsmen the Vela sighting offered "no conclusive evidence of a nuclear explosion."

The finding outraged senior scientists at the nuclear research institute in Los Alamos, site of the world's first atomic explosion designed by Dr. Robert Oppenheimer. The institute, itself, had been responsible for designing Vela.

Hersh quotes Louis Roddis, a member of the Nuclear Intelligence Panel, the most highly classified intelligence group in the U.S. government: "There was a real effort on the part of the administration to downplay it."

Deputy Under-Secretary of State Mr. Joseph Nye jun [name as received] later told Hersh: "There wasn't much that could be done. The Israelis had already done it (made a bomb). It was not something you could make a demarche about. The question is: do you make a big hullabaloo about it?"

The answer was no.

In Tel Aviv, the Vela sighting caused similar panic. Hersh says the tests probably were arranged in a secret agreement with Prime Minister Vorster by former Defence Minister Mr. Shimon Peres, when Mr. Peres visited South Africa in 1977.

There was a rift between Mr. Peres and the newly-elected Prime Minister, Mr. Menachem Begin, whom Mr. Peres had treated with "contempt and ridicule throughout his career."

It is likely that Mr. Begin was not immediately aware of the South African/Israeli collusion until the Vela sighting.

Mr. Ben-Menashe says that Mr. Begin, in an attempt to get to the bottom of the matter, decided to send his newly-appointed Defence Minister Mr. Ezer Weizman to talk to Pretoria.

"Weizman came back," Mr. Ben-Menashe recalled, "and said, 'we have promised these guys nuclear warheads.'" He recommended to Mr. Begin that they pay up and carry out the promise.

Armcor Subsidiary May Lose Missile Test Site

92WP0087C Johannesburg THE WEEKLY MAIL
in English 8-14 Nov 91 p 3

[Article by Gavin Evans: "Council Fires First Salvo at Armcor Testing Site"]

[Text] The embattled Armaments Corporation of South Africa (Armcor) yesterday lost the first round in a new war building up in the Cape Supreme Court. What is at stake for Armcor is its rocket fuel testing site in the heart of an internationally recognised Kogelberg Nature Reserve in the Cape Peninsula—valued at R41-million by Armcor and R10-million by its opponents.

The Rooi Els Local Council is suing Somchem (Pty) Ltd (Armcor's rocket fuel subsidiary), together with the Overberg Regional Services Council (ORSC) and the administrator of the Cape. If the Rooi Els council wins, Somchem will be forced to close its operations in the reserve, which have been key to the development of its ballistic missile capacity.

Mr. Justice Harold Berman yesterday gave the reasons for his 16 October judgment, in which he ordered the ORSC to pay all the Rooi Els Council's costs on a punitive (attorney-client) scale from 10 July, for unnecessary delays in furnishing a number of documents concerning Somchem's occupation of the land. Papers are currently being exchanged between the parties, but judgment is not expected until the middle of next year.

The council, which is being supported in its action by several surrounding local authorities and ratepayers' associations, is claiming that the ORSC (and its predecessor) has no authority to lease the land (known as Portion 186) to Somchem, and is asking the court to review its decisions in this regard.

What has prompted the residents to take the armaments giant to court is the noise and air pollution they believed Somchem is responsible for. The site is set in a "floral kingdom" which is being submitted as southern Africa's first "biosphere reserve"—an area registered by the United Nations Educational Scientific and Cultural Organisation because of its species diversity.

For years, residents have complained of frequent day and night explosions which are described as "shockingly loud, even several kilometres away."

On some occasions these "huge booms" have been followed by a "massive plume of white smoke rising nearly a kilometre up and leaving the smell of chlorine in the air."

Until this case first came to court earlier this year, Somchem had retained total secrecy about its activities in the area. What is now acknowledged is that Somchem has two testing ranges on Portion 186—one involving the use of a large calibre howitzer for testing muzzle velocity, and the other used for testing rocket propellants.

This site is one of four involved in the production of ballistic missiles of various descriptions, Armscor's think tank, Houwteq, is based in nearby Grabouw. Somchem's head office and factory in Somerset West is used for the production of the rocket components, while the missile testing site is situated at the Overberg Test Range in the De Hoop Nature Reserve.

THE WEEKLY MAIL has documents showing that in the mid-1980s huge amounts of missile-related technology was imported from the United States, Switzerland, Germany and the Netherlands.

One document, dated 28 March 1984, and signed by Somchem official Johannes Stefanus Marais, details the import of two cases, weighing 149 kg, containing "Oerlikon Pressure Test Barrels," and "Parts of Military Projectors," from Machine Tool Works Oerlikon Buhrle Ltd, of Zurich, Switzerland.

Another, dated 12 September 1983, involves the import of 165 kg of "bomb calorimeter and accessories" from the Parr Instrument Company, Moline, USA. Eight months later the same American company sold 7.5 kg in replacement parts for the bomb calorimeter. Other imports involved large quantities of chemicals (believed to be used for missile technology) from Shell and other U.S. and European companies.

In 1989 the Rooi Els Council was formed as a forum for homeowners' complaints. Two factors brought matters to a head and led to the current legal action.

First, the Caledon Divisional Council (which had previously leased the 400 ha land to Somchem for R25 a year) announced it had sold the plot to the company for R500. Then Somchem announced plans to expand its presence there (and indeed has started to build new facilities on the plot since the matter went to court.)

The Rooi Els Council argues that one of the conditions set by the administrator in transferring the land to Caledon Divisional Council (and subsequently the ORSC) was that there should be no building or subdivision on it. It was, in effect, held in trust for the local ratepayers as a water storage area.

In 1985 it was declared a mountain catchment area by the government, which meant that the Caledon Divisional Council was obliged to maintain it in a pristine state.

The Rooi Els Council is arguing that the ORSC, in leasing the land to Somchem, did not apply its mind to these obligations, and therefore the lease is invalid. They are asking the court not only to order Somchem to leave the area, but also to restore it to its previous state.

Official on Control of Missile Sales, U.S. Ties
HK2911071291 Hong Kong THE STANDARD
in English 29 Nov 91 p D-5

[By Cary Huang]

[Text] China is willing to cooperate with the international community in the peaceful use of space technology, as well as the control of missile sales, says a senior Chinese astronautics industry official.

In an interview with THE STANDARD yesterday, Liu Jiuyan, Vice-Minister of Aero-Space Industry and Vice-President of the Chinese Society of Astronautics, said China's space science and satellite technology were mainly aimed at social productivity and economic development.

Mr Liu, a Soviet-trained astronautics expert, said China had sold a limited quantity of arms to certain countries, but these were mostly defensive rather than offensive weapons.

"China's arms sales have been much less than those by other major nations, especially the United States and the Soviet Union."

China had adopted a very cautious and responsible attitude on the issue.

"We have set strict guidelines. Firstly our arms sales should be confined to meet the defense needs of a country, and secondly such sales should not threaten the stability or security of the region," he said.

"And thirdly, our arms sales are in line with international practice and we are willing to co-operate with the international community in this field."

Mr Liu is in Hong Kong to launch an exhibition on China's aero-space technology—the first by China in the territory.

Although he had not been invited to take part in negotiations over the control of missile sales by the seven

industrialised nations China, which was not a signatory to the agreement, still followed the international practice in that field.

In response to Western criticism of China's missile exports, Mr Liu said the Western nations, the United States in particular, had exported much more missiles than China to other countries, including the Middle East.

Mr Liu added that China had co-operated with the other four permanent members of the UN Security Council when they met to discuss the problem in Paris in July and later in London. Mr Liu said both meetings had resulted in an understanding on the principle of missile sales.

The official denied China had sold missiles to Iraq.

"I had read some media reports recently which said China had exported missiles to Iraq. I know this accusation is totally groundless," he said.

When asked about the prospect of China exporting astronautics technology, the expert admitted that the U.S. ban on new export licences for satellites destined for China would have a serious effect on the industry, though many nations and international companies had shown interest in space projects.

The Bush administration last June effectively scuppered a bilateral agreement under which China would have been allowed to launch nine U.S.-manufactured satellite payloads over a six-year period.

"We hope after the improvement of Sino-American relations the situation would be better," he said.

Though he believed the American government felt its ties with the mainland were important, he did not expect a great improvement in relations in the foreseeable future.

"I thought the relations would improve following the visit to Beijing by American Secretary of State James Baker, but I do not think it has had a substantial impact at the moment. And I do not expect a great improvement in this brief space of time," he said.

JAPAN

Defense Official on Soviet Nuclear Arms Control

OW0912091791 Tokyo KYODO in English 0859 GMT
9 Dec 91

[Text] Tokyo, Dec. 9 KYODO—Japan is concerned about the management system of nuclear weapons deployed in three predominantly Slavic Soviet republics which announced Sunday the formation of a commonwealth, a top Defense Agency official said Monday.

Akira Hiyoshi, vice minister of defense, told reporters, "I fear the fact that the ownership of nuclear arms moving to each Soviet republic from the central government, which means fresh unstable factors could be created in international society."

The leaders of the Russian Federation, the Ukraine, and Byelorussia declared the demise of the Soviet Union and that they were forming a "commonwealth of independent states."

Hiyoshi also referred to reports that the three republics will control their nuclear arsenals under united authorities, and said, "if such a control system is reliable, it would be preferable."

"I hope the United States and the Soviet Union will be able to make progress in the process of reducing their remaining nuclear arms," he said.

SOUTH KOREA

North Says Japan Is Developing Nuclear Arms

SK0912101391 Seoul CHUNGANG ILBO in Korean
9 Dec 91 p 2

[Report by Pae Myong-pok from Vienna]

[Text] On 7 December Chon In-chan, North Korean ambassador to its mission in Vienna, who is participating as an observer in the International Atomic Energy Agency board of directors' meeting being held in Austria's capital of Vienna, stated: "Japan is promoting the development of nuclear weapons secretly. The international community must be on the watch for the possibility of Japan's development of nuclear weapons."

This claim by North Korea was the first time in which suspicions about Japan promoting the development of nuclear weapons were officially discussed in an international meeting.

A high-ranking official of the North Korean mission said: "We are picking up information from various places stating that Japan is promoting the development of nuclear weapons secretly. We know that the United States is aware of this and that it is carrying out close inspection of Japan's nuclear-related activities."

During the board of directors' meeting, the Japanese representative strongly denied North Korea's claim, and reconfirmed the Japanese Government's three main policies: that it does not produce, maintain, nor bring in nuclear weapons.

PRC Said Unlikely To Veto UN Nuclear Action

SK0712094491 Seoul YONHAP in English 0930 GMT
7 Dec 91

[Text] Seoul, Dec. 7 (YONHAP)—China is not expected to veto when issues of North Korean nuclear development program are discussed in the U.N. Security Council, a South Korean Government official said Saturday.

Given the Chinese attitude at the time of South and North Korea's simultaneous entry into the United Nations, the official said, China's position seems to be "clear" as far as North Korea's nuclear program is concerned. He did not elaborate.

The official said the government was confident the next meeting in February of the International Atomic Energy Agency (IAEA) Board of Governors would be a turning point for an international bid to stop North Korea's plan to develop nuclear arms.

He said the government would promote a separate international effort to block North Korea's nuclear ambition from the IAEA's initiative in view that North Korea's nuclear scheme directly affects the security situation in the Korean peninsula.

He said representatives from the United States and Japan have proposed in the current IAEA Board of Governors meeting that the agency draw up concrete punitive measures to be used against North Korea in case North Korea should fail to sign the Nuclear Safeguards Agreement until the February IAEA meeting.

PRC Chemical Company Establishes Seoul Office

SK1012021291 Seoul THE KOREA HERALD
in English 10 Dec 91 p 6

[Text] The Ministry of Trade and Industry has permitted the establishment of a Seoul branch office by China National Chemicals Import Export (SINOCHEM), China's largest trading firm specializing in petrochemical products.

SINOCHEM, with annual sales of \$12.8 billion last year, is the first "genuine" Chinese firm to set up a branch in Korea, ministry officials said yesterday.

Eight Chinese businesses have obtained permission to establish branches here but all of them were either based in a third country or were Korea-China joint ventures, they said.

SINOCHEM's advance here is expected to facilitate a rush of Chinese firms to Korea, the officials said, adding that the ministry will allow more Chinese firms in

keeping with the accelerating economic ties between Seoul and Beijing, including the scheduled conclusion of a bilateral trade agreement.

Nine Korean businesses and the Korea Foreign Trade Association [KFTA] are now operating a total 13 branch offices in Beijing and other Chinese cities.

In a related development, an increasing number of Korea's small- to medium-sized businesses have made investments in China, according to Korea Small Business Promotion Corp.

In a China investment explanation session held at the KFTA, the small businesses' organization said that Korea's investment in China has totaled \$112 million on 130 projects as of the end of September.

The smaller firms' investments represented 86.2 percent of the total in terms of project number and 59.5 percent in investment amount.

Most of their investments were made to capitalize on the cheap labor in China, it said.

Joint-venture projects had accounted for more than 75 percent of total investments until 1990 but independent projects numbered 38 this year, accounting for 46.9 percent of the nine-month total.

North Scientists in PRC Develop, Test Missile
SK0712051991 Seoul SEOUL SINMUN in Korean
7 Dec 91 p 1

[Text] In addition to North Korea's on-going development of nuclear weapons, it sent a large number of scientists to China to develop a medium-range missile and the delivery system for nuclear weapons, and it had successfully developed its own missile.

Defense experts said on 6 December: "North Korean experts successfully tested a medium-range multiple-warhead missile, with a range of 800 km, at a nuclear rocket base in Yinchuan, Gansu, a northwestern province in China."

These experts also said: "North Korea developed this ultramodern missile with Chinese assistance. Also, China lent a launching pad for the test."

They also said: "North Korea has sent 90 military and weapons experts to the nuclear rocket base in Yinchuan since 1988 and learned how to test nuclear weapons and launch missiles from China." They also said: "Given the fact that North Korea successfully developed and tested the missile three years after it had sent military experts to China, North Korea must have acquired technology for testing nuclear weapons to a great extent."

They also said: "In addition to its development of the medium-range missile, North Korea sent 230 Army, Navy, and Air Force weapons experts to a naval base in

Dalian on the Liaodong peninsula for training in technology for developing ship-to-ship, surface-to-surface, and surface-to-air missiles or to develop them."

North Korea previously deployed an improved generation of Scud missiles, with a range of more than 500 km, north of the DMZ for actual combat purposes, thus including the entire Korean peninsula within their range. This was followed by the development of the "Nodong No. 1" surface-to-surface missile whose range is 1,000 km, which includes Japan within its range.

The military experts said the multiple-warhead missile, whose range is 800 km and which North Korea successfully tested, will pose a new threat to security on the Korean peninsula and the balance of power in northeast Asia.

North Korea developed the multiple-warhead missile, a strategic delivery system, with nuclear weapons development in mind. Compared to the single-warhead missile, the multiple-warhead missile is a very fearsome weapon. Also, if it is launched in Pyongyang or Wonsan, it can reach not only anywhere on the Korean peninsula but also Kyushu and some areas of Japan's Honshu.

ROK Defense Ministry officials declined to confirm this. However, the latest edition of SENTAKU, a prestigious Japanese monthly magazine, reported this.

North To Sign Accord at Start of Weapons Removal

SK0712030391 Seoul CHOSON ILBO in Korean
7 Dec 91 p 2

[Text] Chon In-chan, ambassador at the North Korean mission to the international organizations in Vienna, met with ROK reporters on 6 December (Vienna time). Referring to the preconditions for North Korea's signing of the Nuclear Safeguards Accord, he said: "North Korea will sign the accord immediately after the United States begins withdrawing nuclear weapons from the ROK and officially informs North Korea of this." He also said: "The nuclear facilities and nuclear bases in North and South Korea will be inspected after the DPRK-U.S. talks decide what facilities will be subjected to simultaneous inspection and when and how and whether the International Atomic Energy Agency will participate in the inspection."

However, Ambassador Kim declined to comment directly on whether North Korea will allow inspection of its facilities suspected to be facilities for nuclear development, adding: "That can be decided during the DPRK-U.S. talks."

MALAYSIA

Writer Calls for Nuclear Technology Development *92SE0056A Kuala Lumpur BERITA HARIAN in Malay 11 Oct 91 p 10*

[Article by Kamal Ahmad; "Malaysia Developing Nuclear Technology"]

[Text] The nuclear science field, with its most modern of electric-power technologies, needs to be expanded in this country. In the non-electric-power sector, the three aspects approved for Malaysia are:

- The medical industry—radiology, radiotherapy, and medical research;
- Industry—extensive use in oil exploration, soil and mineral analysis, and the testing of electronic components; and
- R & D (research and development) in agriculture and related sectors.

The UTN (Nuclear Energy Unit), as the organization responsible for encouraging, expanding, and supervising this sector, must plan and implement R & D programs for widening the use of nuclear science technology for agriculture, manufacturing, food production, and medicine.

In its R & D, the UTN has been successful in producing varnishes through a laboratory process using natural rubber and Malaysian palm oil. The substance is safe and does not contaminate the environment. This success is the result of yet one more effort to diversify the use of the country's natural rubber for the sake of development and the economy. The UTN is also responsible for new strains or clones of plants and has been successful in producing the rice called "Ali's Staff."

In the field of nuclear medicine, the UTN acts as a program coordinator for the training of specialists at three large hospitals in Australia. This nine month program involves three groups, each of which includes medical experts, physicists, pharmacists, and technicians. After undergoing training, the groups will function using the "nuclear clinic" method at the Kuala Lumpur General Hospital for the central and southern zones; the Malaysia Science University Hospital at Kubang Kerian, Kelantan (northern zone and East Coast); and the Kuching General Hospital in Sarawak (for East Malaysia).

According to UTN Director Datuk Dr. Mohd. Ghazali Abdul Rahman, medical science offers a broad field for pioneering. Practical aspects in this country are minimal compared with other developing countries like India and Pakistan, which have more nuclear medicine treatment centers.

Should the use of nuclear energy, which in this country is now directed toward the non-electric-power sector, be shifted to power generation?

This question can be answered by evaluating four factors:

- To what extent will the people accept the construction of a nuclear reactor?
- Is the government able to bear the cost of building and operating a nuclear reactor and able to bear the risks?
- Where would the reactor be built?
- To what extent would Malaysian experts be able to manage a reactor?

So far, the country has depended on electric power from four sources: hydro, coal, oil, and gas. Nuclear power would be the last option.

Nevertheless, the government needs to think about planning and implementing the construction of a nuclear power reactor as preparation for any unexpected power crisis in the future. Malaysia needs to be ready and to face the fact that at some point in the future we will run out of oil and gas. This situation will hit every country in the world. Hydroelectric power generation will not accommodate the steadily rising demand of the industrial growth that will be the country's heartbeat. Even if oil and gas are not depleted, they will be more expensive; and it will not be as economical to generate power using those fuels as to use cheap uranium to produce radioactivity to drive turbines.

Malaysia is now entering the third era in power generation, namely a period of using LNG (liquefied natural gas), since oil and coal were found to contaminate the environment. Nuclear power is natural as a future source of energy because it is an up-to-date technology that is cheap, safe, and clean.

The UTN, formed in February 1985, now has enough expertise to operate a nuclear power reactor. Its 84 specialists in various aspects of nuclear science are recognized internationally and are ready to lead the way after they receive instruction and experience with the private firm that builds the reactor.

The use of nuclear power is not foreign to developing countries in the Southern Bloc and the Asia Pacific region. India, Pakistan, Japan, Korea, and Taiwan, for example, have nuclear reactors for generating power; while Australia, Indonesia, Malaysia, and Thailand have potential in that direction.

According to reports on latest developments, Indonesia plans to build a nuclear reactor under a project that is to begin in 1995 and is expected to be finished in 2002. The Philippines is also said to have built a nuclear reactor under the administration of former President Marcos.

The development scenario for nuclear power (in megawatts) in developing countries in Asia is shown in the table.

Nuclear Power Development Scenario (in Megawatts) in Developing Countries in Asia From 1990 to 2010

Country	1990	2000	2010
Bangladesh	0	5,000-7,000	8,000-10,000
China	0	0	600-900
India	1,594	5,000-12,000	12,000-15,000
Indonesia	0	0	600-1,800
Iran	0	0-2,100	2,000-4,000
Malaysia	0	0	600-1,800
Pakistan	125	425-1,300	1,300-3,000
Philippines	0	620	620-1,500
Republic of Korea	7,220	10,000-13,500	17,000-20,000
Sri Lanka	0	0	600-900
Thailand	0	0	600-1,800
Totals	8,939	21,000-34,600	40,900-59,700 [figures as published]

The figures in the table were taken from a working paper presented by Budi Sudarsono at the Seminar on Oil and Gas Environmental Strategy for the Asia Pacific Region, which was held in Kuala Lumpur on 26 and 27 August. Budi Sudarsono is chief of the Energy Sources Section, Natural Energy Sources Division, of the UN Economic and Social Commission for Asia and the Pacific.

In the developed countries, 80 percent of France's electric power comes from nuclear power; Japan, 3-40 [as published] percent; and the United States, 20 percent. The United States is facing problems with oil supply and other energy sources.

It is a fact that developing countries will enter the nuclear power age. To respond to the need for electric power, which is one of the main types of "capital" for becoming a developed country, Malaysia also needs to seek alternative energy sources to reduce dependency on hydroelectric power, oil, and gas. As a future industrial country, electric power will be used to the maximum in the industrial sector besides serving the daily needs of 70 million people.

At present, Malaysia does not have a nuclear power reactor and has only a research reactor capable of generating 1 megawatt of electric power. A nuclear power reactor generates 300 to 1,100 megawatts.

UTN nuclear scientists are always looking ahead to future developments with an attitude of readiness as they conduct various kinds of research. They are renewing their vision while they follow nuclear technology development throughout the world.

They are getting training through various programs in countries with nuclear reactors to ensure that they will not be left behind.

"Whether or not we have a nuclear reactor depends on government policy, but as scientists we must be ready at all times.

"Although our experts may not be used in this country, they may be used by other countries; and at some point we may export them.

"The UTN is willing and capable to operate a nuclear power reactor at any time," said Datuk Dr. Mohd. Ghazali.

The UTN now has 84 experts in various non-electric-power nuclear fields who are relied on by other countries for managing courses and giving lectures. The UTN focuses on certain fields it has found to be developing quickly and is increasing the number of its experts in those fields.

"If we become a member of the International Atomic Energy Agency (IAEA), we will have to sign a statement that our objective is not power [as published]. We will then have access to information on peaceful uses of nuclear technology," he said.

Nuclear reactor safety is always monitored in this country, however. An IAEA team of 10 nuclear experts, which is known as "Safeguard," once every two years conducts visits to inspect records, documents, and plants to ensure that the UTN does not violate regulations or agreements.

Malaysia can be proud that two of our citizens are "Safeguard" members responsible for inspecting nuclear reactors in other countries.

Normally, a reactor is built by a company, and then local experts become involved in jointly controlling it for a specific time while they study its management. If a second reactor is needed, local experts will join the company in building it under a joint venture.

Because of its good record in conducting and supervising R & D work, the UTN must be entrusted with taking the first step into the nuclear electric power era. The main point is that, for the sake of the future of the country and all the people, the public needs to be given an explanation of the importance of entering this field.

SINGAPORE

Company 'Embroided' in Iran Arms Scandal

BK0912114891 Singapore THE STRAITS TIMES
in English 9 Dec 91 p 20

[Special report by Sandra Davie]

[Text] A Singapore company, a subsidiary of a Miami-based corporation, has become embroidered in an arms smuggling scandal.

Two Singaporeans linked to the company, Aero Systems Private Limited, are among those under investigation by the U.S. Government for selling aircraft and missile parts to Iran.

These illegal sales are said to have played a crucial role in Iran's protracted war against Iraq in the 1980s as they kept the Iranian Air Force's fleet of Phantom F-4 jets airworthy.

The missile and aircraft parts were allegedly smuggled to Iran disguised as commercial aircraft parts and with the names of the end-user's names falsified.

Under Singapore and U.S. laws, the importing and exporting of arms without proper licences is illegal.

Aero Systems Pte. Ltd has been indicated in the U.S. along with its parent company, Aero Systems Inc, and another subsidiary in Hong Kong, Hierax, for selling millions of dollars worth of sensitive U.S.-made navigational equipment used in the Phantom jets.

Two former Aero Systems Inc. employees, both of them Australians, have also been charged.

A Tokyo-based concern, Japan Aviation Electronics, and three of its employees have also been named in the indictment.

But investigations are still going on, with people in Singapore, Hong Kong, Japan and the U.S. being probed.

One of the two Singaporeans allegedly involved is a former employee of Aero Systems Pte. Ltd, while the other is still with the company.

When contacted, both of them said they did not want to comment.

Asked if he was aware of being investigated, the current employee of Aero Systems Pte. Ltd said: "I don't know anything and I don't want to know anything."

A STRAITS TIMES investigation spanning three countries—the United States, Japan and Hong Kong—also revealed that more Singaporeans could be involved in the case.

THE STRAITS TIMES also obtained documents from the U.S. Attorney's Office in Washington DC detailing the charges.

Singaporeans from the same company have also been implicated in a related investigation in Japan, where the government is carrying out its own probe into the illegal sale of Sidewinder air-to-air missile parts to Iran.

Japan Aviation Electronics (JAE) is alleged to have repaired and sold US\$7.25 million (S\$11.9 million) [Singapore currency] worth of Sidewinder missile parts for the Miami-based Aero Systems Inc, knowing those parts would be diverted to Iran through Aero Systems' Hong Kong and Singapore subsidiaries.

Among the parts was a device known as a "rolleron", which is used at the rear edge of the missile's four main fuselage fins. According to weapons experts, it is vital to the accurate guidance of the heat-seeking missile to its target.

When contacted by THE STRAITS TIMES, the U.S. Customs Department in Miami confirmed that some Singapore parties were involved in the deals. But a spokesman for the department declined to disclose the names.

But based on other sources in the U.S., Japan, Hongkong and Singapore, THE STRAITS TIMES managed to obtain the names of two Singaporeans.

According to U.S. Customs, JAE sold the components at the request of Aero Systems subsidiaries to "front" companies of the Iranian armed forces.

This was in violation of the U.S. Arms Export Control Act and the International Traffic in Arms Regulations.

The parts used in Phantom jets which JAE is charged with selling to Iran were gyroscopes made by Honeywell Inc of Minnesota and components made by Los Angeles-based Litton Systems Inc for use in the fighters' inertial navigational system.

Gyroscopes and accelerometers are used to determine the exact positions of aircraft.

According to the indictment, JAE held a licensing agreement with Litton Systems Inc to make the navigational components and sell them to the Japanese military.

Instead, it arranged through Aero Systems subsidiaries to sell the parts to "front" companies of Iranian military.

The indictment also charges former Aero Systems executives, Colin Devellerez and Wayne Waterson, both Australian citizens, and three JAE employees—Hironobu Takahashi, Toshiyuki Murakoshi and Tsutomu Iida—of conspiring to buy gyroscopes from Honeywell and re-sell them illegally to the Iranian companies.

The equipment was sold to Iran between 1984 and 1987, during a crucial phase of the Iran-Iraq war, said the U.S. Customs spokesman.

"We believe it was a critical element in maintaining Iran's flying capability," he said.

Selling arms to Iran has been illegal in Japan and the U.S. since the taking of American hostages in 1979.

But Iran, with a huge arsenal of U.S. arms acquired during the reign of the Shah, needed spare parts and equipment to keep these weapons operating.

Hongkong sources said the usual procedure was for Fasami, an arms procurement company in Iran, to send a request for quotes to Faisun or Gold Manner, Iranian-owned companies in Hongkong, which would source for suppliers in the U.S. and Japan.

When the order was finally placed, the parts would be shipped to Aero Systems in Singapore for re-shipping to Fasami or the Iranian-owned companies in Hong Kong again.

In many cases, invoices and other billing documents were said to be issued by Hierax to Faisun or Gold Manner, which would normally make payment through the Bank Melli Iran branch in Hong Kong.

A check of the company records in Hong Kong showed that Faisun and Gold manner are companies owned by three Iranian merchants—Seyyed Valiollah Miran, Shahpour Afrashteh and Davood Salimian.

BULGARIA

Ukraine 'Will Destroy' Nuclear Arms

AU1312173591 Paris AFP in English 1718 GMT
13 Dec 91

[Text] Sofia, Dec 13 (AFP)—Ukraine will destroy all its nuclear weapons within seven years, the republic's foreign minister Anatoli Zlenko said here Friday. "But if other interested countries help us materially, the time period could be cut to three to five years," he said during a meeting with his Bulgarian counterpart Stoyan Ganev, an official Bulgarian source reported. Ukraine favored the destruction of all the nuclear weapons on its territory and this would take place in three stages over a seven-year time period, Zlenko said, according to the official source.

Ganev and Zlenko signed a protocol Friday establishing diplomatic relations between the two countries, in keeping with an earlier announcement.

The Ukrainian diplomatic chief also said that the Soviet nuclear arsenal located in the territories of Ukraine, Russia, Belarus and Kazakstan should be placed under the republics' control. "Ukraine wants to take control of the nuclear weapons on its territory so that they will never be used," he said.

Ganev, for his part, pledged that a Bulgarian ambassador would be dispatched to Kiev in a few weeks.

Kintex Arms Company Director on Weapons Trade

AU1212153691 Sofia 24 CHASA in Bulgarian
7-8 Dec 91 p 6

[Interview with Anton Saldzhiyski, Kintex director general, by Venelina Gocheva; place and date not given: "Local Conflicts Again Absorb Many Weapons, Kintex Also Sells a Little to the United States"]

[Text] [Gocheva] Mr. Saldzhiyski, who exactly in the country has given you official permission to trade in weapons and ammunition?

[Saldzhiyski] Kintex and the Main Engineering Administration have licenses. It is also envisaged that the new Armtek Association, which is waiting to be registered, will be given permission to trade with restricted responsibility. This is an association of manufacturers and traders from the defense complex, established with government permission. A special government commission on weapons and ammunition production and trade issues export authorizations.

[Gocheva] Is it true that private Bulgarian companies are involved in weapons dumping at the moment on the foreign market?

[Saldzhiyski] If this has happened, it is illegal. Private companies at present do not have licenses.

[Gocheva] What will happen, nevertheless, if private companies enter the arms trade?

[Saldzhiyski] Perhaps in a year's time, this will be the norm. However, at the moment, when defense production is state owned and is envisaged to remain so, it is not advantageous for the arms trade to be in too many hands. If too many traders appear, the price of Bulgarian weapons will fall.

[Gocheva] There are rumors that Bulgaria trades weapons on the black market worldwide.

[Saldzhiyski] That is ridiculous. There are official markets with official deliveries of arms and ammunition ordered through the defense ministries of specific countries to meet their needs. Kintex is not involved in smuggling. The black market may favor the private trader who sells 100-200 submachine guns, but that is nothing. It is inexplicable that there are still suspicions about Kintex. These arose from the state enforced taboo on information concerning arms deals. There was a similar negative attitude toward the Hungarian Tekhnica and Czech Omnipol companies, but it gradually disappeared. Fortunately none of our partners backed out of deals, but probably we lost potential new clients.

[Gocheva] Nevertheless, Kintex's name was mixed up in the incident a month and a half ago, when the Cypriot boat Cape Maleas was detained by the Turkish authorities.

[Saldzhiyski] This was our official delivery to the harbor. After that, the arms are the concern of our client. The Turkish customs officials detained the boat's captain, who obviously claims that it was a matter of a misunderstanding between him and the authorities. This incident did not deserve so much attention, and the idea that most smuggling went on through the Bosphorus was ridiculously blown out of proportion.

[Gocheva] Mr. Saldzhiyski, during recent months, have any Bulgarian arms gone to Yugoslavia?

[Saldzhiyski] No. Right at the beginning of the conflict we adopted a tacit restriction. Indirect requests for arms deals were made to us by sources from Croatia and Slovenia, but we declined them.

[Gocheva] Do you sense fresh activity in the arms market at the moment?

[Saldzhiyski] The state of the market is not at its best, despite the fact that it is coming out of the sales depression that began somewhere after 1985. Irrespective of the settling of many conflicts that absorbed a great deal of weapons, a lull has not set into the world arms trade. Local conflicts are fiercer now and a certain increase in sales can be felt.

[Gocheva] What, at the moment, is the hit in the arms market?

[Saldzhiyski] There is no hit. Different clients seek weapons according to their financial capabilities and national security doctrines. However strange it is, not only American but also Russian aircraft have been in great demand recently, especially those models that the Russians did not offer for export until recently, like the SU-29 and MIG-31, for example. Large tanks, antimissile systems of the sort used in the Gulf, and means of anti-aircraft defense are sought after.

[Gocheva] What type of clients does Kintex have?

[Saldzhiyski] Average and poor. We are now trying our luck in acquiring richer partners. The Arab countries, Africa, and Asia are the traditional consumers of Bulgaria's arms production. This year we managed to export a very small amount to the United States and England.

[Gocheva] How much does the state make from this trade?

[Saldzhiyski] A great deal.

[Gocheva] We are talking about six figure profits, are we not?

[Saldzhiyski] It is ridiculous to talk about six figure numbers in our line of business. One deal alone is bigger than that. According to the information I have, nobody's exports are greater than Kintex's this year. Figures from the Ministry of Foreign Economic Relations used to be quoted, and a classification showing export performance used to be produced. For years on end, we headed this classification and had one competitor, Khimimport.

[Gocheva] Does the state help your profitable business?

[Saldzhiyski] The state does not take any notice of us at all, but I also do not need subsidies. It is rather the state that needs us because we pay sizable taxes and the budget must be satisfied. The taxes are tolerable for us, but for new firms that are taking their first steps and are having to invest they are heavy.

CZECHOSLOVAKIA

Omnipol Director Views Arms Sales to Pakistan

*AU1112152591 Prague MLADA FRONTA DNES
in Czech 9 Dec 91 p 9*

[Interview with Stanislav Kozeny, director general of Omnipol, by Viliam Buchert between Canton and Prague; date not given: "Our Arms Exports Are Also a Political Issue"]

[Text] Some information on arm sales has also emerged within the context of Prime Minister Calfa's visit to Pakistan and China. Therefore, we asked Stanislav Kozeny, director general of Omnipol [foreign trade company], who travelled with the delegation, as a member of the group of Czechoslovak industrialists, for an interview:

[Buchert] In an interview for our paper, Foreign Trade Minister Jozef Baksay said that the government has not granted anyone permission to sell arms to Pakistan. Nevertheless, you allegedly led successful negotiations in Islamabad.

[Kozeny] Pakistan is a partner of long standing, and we signed a contract on the sale of ground technology. Of course, exports are subject to permission from the Federal Ministry of Foreign Trade (according to our editorial office's sources, however, a Federal Ministry of Foreign Trade representative directly participated in the negotiations in Islamabad, and this puts the question of permission into a completely different light—author's note).

[Buchert] Have you also offered our arms for sale in China?

[Kozeny] It was only market analysis. So far, we have not supplied anything there.

[Buchert] Where in the world are your best customers?

[Kozeny] Mostly in Africa. It used to be the Middle East, but our government's measures make exports to this conflict-stricken region impossible.

[Buchert] Specifically, how many countries does this involve?

[Kozeny] There are several dozen of them.

[Buchert] Has Czechoslovak Government policy recently deprived you of any of your significant contracts?

[Kozeny] Yes, the recent case of Iran, for instance, is well known to the public.

[Buchert] Our economy is in great difficulty. Do you not think that limiting exports of Czechoslovak arms will further deepen this crisis?

[Kozeny] Definitely, but Omnipol understands and respects the policy of the Federal Government.

[Buchert] Do you feel the impact of unfair competition in your once exclusive sector? How is it in other countries?

[Kozeny] There have been some attempts by private companies to sell arms and technology, for instance, even to Pakistan, a country we just visited. These enterprises have neither a license nor contracts with our producers. It is a dirty business, and not only because these "companies" accept half the regular prices. It is much more important that, theoretically speaking, this could involve arms sales to conflict-stricken regions via third countries.

[Buchert] So, what is the general situation in our arms exports?

[Kozeny] The volume is rapidly declining, particularly as a result of the disintegration of the Soviet market.

[Buchert] Is it at all possible to make the Czechoslovak arms trade public to the point of dispelling doubts concerning its respectability?

[Kozeny] It would be possible technically, but commercially, because of competition, any information would be sheer madness. I would like to point out that arms sales are also a political issue for us.

[Buchert] Arms exports are declining. Will this also have an effect on OMNIPOL's operation?

[Kozeny] This year, arms represent 60 percent of our turnover, and we expect that this figure will be smaller next year.

[Prague MLADA FRONTA DNES in Czech on 10 December on page 11, in the "From Home" column, publishes a 40-word report that adds: "Special-technology shipments to the Pakistani Army were the subject of negotiations by Tatra Koprivnice and OMNIPOL directors who, together with the Federal Foreign Trade Ministry section, even met with the Pakistani Armed Forces chief of staff."]

YUGOSLAVIA

Production of Chemical Weapons Near Mostar

92BA0184B Zagreb VJESNIK in Serbo-Croatian
26 Nov 91 p 8

[Article by Mate Zelenika]

[Text] Mostar—Those who did their required military service in special ABC [Atomic-Biological-Chemical] units of the Army can testify that they handled chemical weapons during their specialized training. ABC sections exist in every military formation of any size, but they do not all go through the same training. The best-known training ground for members of this arm is not far from Skoplje. We have learned from recruits who trained at that facility that officers of the JA [Yugoslav Army] "treated" them with chemical weapons so that they would gain a better mastery of the topic "Recognition of Chemical Weapons." "They worked" under full ABC protection and with greatly diluted versions, but still, they recall, they were not indifferent when after an analysis of samples on the instruments they read: nerve, blood, or blister gas....

In spite of the denial before the public world, the Army nevertheless does possess this type of weapon. Army apologists might say: These are diluted versions! But it must be borne in mind that neither concentrates nor "diluted versions" have ever been an article in international transactions in the arms trade. Which leads to another conclusion: The JA is itself manufacturing those "diluted versions" for training purposes. But is it any

problem for someone manufacturing the "diluted versions" to also produce the authentic chemical weapon? The question inevitably arises: Where are the "death factories" located?

Behind Barbed Wire and a Mine Field

In spite of the demystification that has opened a gate that until yesterday was closed under 10 locks, this topic is still classified as "strictly confidential"! But that "strictly confidential" does not have the importance today it once had. People are talking more freely. And although there are discrepancies in the stories about the location of chemical weapons factories, on one point they agree: that the "heavy" chemical weapons factory is in the settlement Vrapcici, a few kilometers north of Mostar. In that settlement, one sees a rather low building enclosed at a radius of 1 km by two barbed wire fences. There is an interval of some 10 meters between the first and second barbed wire fences and most likely a mine field. So far, no one has dared to check. It is impossible to verify the activity of that military facility through official channels. Military officers, however, have never denied the numerous assertions about this "institution" as a site for weapons production. That is enough to arouse reasonable interest.

There is no dispute that the construction work on the "institute" was completed in 1965. Although then the local people noted "unusually deep foundations," which means that most of the installation is beneath the surface in the harsh stony ground of Hercegovina, it seems that the key year in the operation of this installation was 1975. One retired officer of the JA told us that special furnaces were imported for the factory from France that year. These are boilers of a kind with thick steel walls and plugs of special gold alloys, 2 x 6 meters in size, the kind that are indispensable in the process of manufacturing chemical weapons. According to what we were told, those furnaces were delivered by the French firm "De Dietrich" secretly, by order of the upper echelons. However, it could be that the French trading partners were deceived concerning the purpose of these furnaces, because the entire transaction was wrapped in "civilian cellophane." The importation was done by the Sarajevo firm "Medikomerc." That transaction, they say, still exists only in the memories of those involved.

One Croat Employed

The enigmatic nature of the facility in Vrapcici is compounded by the strong security, consisting of professional soldiers and several military-trained dogs, who constantly patrol the enclosure, lighting has been installed that would do justice to the stadium of the HASK [Croatian Amateur Soccer Club]. The number of personnel is unknown, but the ethnic structure is known. All the employees are Serbs or Montenegrins. Experts have been moved here from Belgrade, Pancevo, and Zemun, while the rest are "locals." There is one Croat employed in the factory, the doorman, to whom fellow members of his nationality give a wide berth. New

workers are hired, from the cleaning woman to the director, exclusively by the direct and discretionary decision of someone in the SSNO [Federal Secretariat for National Defense]. First, members of military security study the family tree of the potential worker "from great-great-granddaddy to the present day." But regardless of the selection, people nevertheless feel the pressure from the nature and mysteriousness of the work.

By means of the furnaces imported there from France, it is possible, from components used in the chemical industry (usually the cosmetic industry), to manufacture "sarin," "soman," "tabun...." Until recently, most of the factory's capacity was oriented toward manufacturing tear gas. It was packed in metal canisters marked "CS-4." The remainder of production here is also performed under code names. Most of the employees do not even know what they are making. The production process is so organized that only a few supervisors know all the details. The operatives themselves only receive an order: Mix components A, B, C, in such-and-such proportions, at such-and-such a temperature, under such-and-such pressure.... Members of ABC units from Skopje recall that they could read on the instruments several types of chemical weapons: nerve types, psychogenic types, and blood types.

Our study concerning the factory in Vrapcici indicates the possibility that the finishing phase of "processing" takes place somewhere in Serbia. Those with whom we talked say at the Lucani explosives factory near Cacak. It could be that they fill various kinds of conventional munitions here with chemical weapons. This is indicated because refrigerated trucks with license plates from Cacak, Pancevo, Krusevac, and Belgrade visit the factory in Vrapcici. The visits are always at night, and when

a truck is leaving the "institute," military police units completely block the main highway between Sarajevo and Mostar.

Local People Without Water

A dispute between the local people and the mysterious factory is indicative. Five extremely strong water pumps, sufficient in capacity to supply Mostar, were installed at the local water source to meet the needs of production. When they were installed, the local people were promised that they would operate only two hours a day. But sometimes they operate 24 hours, and many local people are deciding to dig wells even though they are connected to the water supply. All the protests of the local people because of failure to respect the agreement have been in vain. The Army is not accountable to anyone! Recently, the stream from the faucets of the people of Vrapcici has been getting thinner and thinner, which indicates that production is being stepped up. The Neretva valley is well-known for its above-average number of registered malignancies, and some of the members of the Party of Greens from Mostar are inclined to the assertion that all of this should be attributed to the plant in Vrapcici. It was once said that this occurred because of the immoderate application of pesticides, but the "Greens" say: In the Neretva valley, pesticides are not used more than they are in other regions!?

The chemists with whom we consulted say that the process of manufacturing chemical weapons under the conditions described cannot be hermetically sealed, and they allow a direct connection between that production and the above-average number of malignancies. Everything that is taking place there is a secret only for those who are most threatened! There is no doubt that someone in foreign intelligence services could inform VJESNIK readers in much greater detail and with a much less strenuous investigative effort. But....

ARGENTINA

Menem To Sign Vienna Nuclear Safeguard Treaty

*PY1012011691 Buenos Aires NOTICIAS
ARGENTINAS in Spanish 2321 GMT 9 Dec 91*

[Text] Buenos Aires, 9 Dec (NA)—President Carlos Menem will travel on 12 December to Vienna, Austria. In Vienna, Menem and Brazilian President Fernando Collor de Mello will sign a nuclear safeguard treaty with the International Atomic Energy Agency [IAEA].

Menem is scheduled to leave Vienna on 15 December directly for Brasilia where he will hold a two-day meeting with his colleagues from the Mercosur [Common Market of the South]. During that meeting the Mercosur presidents will discuss regional issues.

The announcement about Menem's unscheduled trip to Europe was made tonight by presidential spokesman Humberto Toledo. Toledo said that the Argentine and Brazilian Foreign Ministries had reached an agreement to sign the treaty now instead of next year as it was originally thought.

Toledo said that Menem had decided to set ahead the signing of the agreement, because Collor de Mello is scheduled to leave tonight for Vienna on an official visit.

Menem will arrive in Vienna on 13 December to sign the Argentine-Brazilian agreement with the IAEA. He will stay in Vienna until 15 December when he is scheduled to fly to Brasilia.

In Brasilia, Menem, along with President Collor de Mello, from Brazil; Andres Rodriguez, from Paraguay; and Luis Alberto Lacalle Herrera, from Uruguay, will meet on 16 and 17 December within the framework of periodical Mercosur negotiations.

Presidential spokesman Humberto Toledo noted that through the agreement, the two countries seek "to lend transparency to their nuclear programs." The two countries signed a nuclear agreement at the bilateral level some time ago.

The Vienna agreement will be signed between Argentina, Brazil and the IAEA, which is in charge of overseeing the peaceful use of nuclear energy worldwide.

Toledo also stressed "the international importance" of the agreement to be signed in Vienna. He added that in its last meeting in London, the Group of Seven had written an entire paragraph in its last document praising the nuclear agreement achieved by Argentina and Brazil.

Nuclear Agreement With Brazil Detailed

*PY1312122491 Buenos Aires TELAM in Spanish
2054 GMT 12 Dec 91*

[Text] Buenos Aires, 12 Dec (TELAM)—The National Commission for Atomic Energy [CNEA] has released some details about the agreements on nuclear policy that

will be signed in Austria by Argentine President Carlos Menem and Brazilian President Fernando Collor de Mello.

The agreement will be signed by the permanent representatives of the two countries accredited to the IAEA [International Atomic Energy Agency] Jorge Taiana and Thereza Maria Machado Quintella, from Argentina and Brazil respectively, and IAEA Director General Hans Blix and Jorge Coll, a CNEA official and secretary of the Brazilian-Argentine Agency of Accounting and Control of Nuclear Material [Agencia Brasilenio Argentina de Contabilidad y Control de Materiales Nucleares—AABAAC] [as received].

Brazil and Argentina will thus favor the implementation of safeguarding measures to verify the use for exclusively peaceful purposes of their nuclear installations, which will be subject to inspections by the AABAAC and the IAEA.

After the signing, which will take place at IAEA headquarters in Vienna, the IAEA board of governors—which will be presided over by CNEA President Manuel Mondino until next August—will hold a special session with the participation of Menem and Collor.

This agreement and one signed in Guadalajara on 18 July 1991 are in keeping with the commitments established in the declaration about a common nuclear policy between the two countries signed by Menem and Collor in Foz de Iguazu in November 1990.

The AABAAC was created by the Guadalajara agreement and its purpose is to implement a common supervisory system to verify the use of atomic installations for exclusively peaceful purposes.

BRAZIL

Aid in Rebuilding Iranian Reactors Discussed

*92WP0774A Brasilia CORREIO BRAZILIENSE
in Portuguese 1 Nov 91 p 10*

[Article by Laercio Silva]

[Text] Brazil could take part in the reconstruction of two nuclear plants in Iran, bombed during the Iran-Iraq war; their design is similar to that of the Angra II and Angra III plants under construction on the coast of Rio de Janeiro. The matter was discussed during the two visits which Joao Santana, minister of infrastructures, paid to Tehran in the last four months and should again be on the agenda, at Iran's initiative, during the meetings between Foreign Affairs Minister Francisco Rezek and Ali Akbar Velayati, Iran's minister of foreign affairs, next week in Tehran.

The Buschehr I and II nuclear plants were under construction in 1980 when the war broke out and were bombed by Iraq several times during the last decade.

When the war ended, Iran attempted to resume construction, but the German Government decided to forbid Kraftwerk Union [KWU] a Siemens subsidiary in the nuclear area, to continue with the project.

Although much of the necessary equipment for the installation of the plants is already in Iran, the German Government canceled the export license for the nuclear engineering services needed to complete the project and to set up the two plants, and even required KWU to return the money received from Iran in payment for these services.

Package

Brazil is in the final stretch toward the signing of a huge package deal, valued at least \$3 billion, to provide equipment and services to Iran. It is on the basis of this opening that Iran is seeking to obtain a counterpart commitment from Brazil to rebuild its nuclear plants. The German firm Hoschief, responsible for the civil construction on the two plants, withdrew its services, leaving Buschehr I with 60 percent of the construction completed and Buschehr II with 20 percent.

What Iran wants from Brazil now is a commitment to complete the civil construction; to provide engineering services, through Nuclen (Nuclebras Engineering, Inc., a subsidiary of Eletrobras [Brazilian Electric Power Company, Inc.]); to manufacture some equipment which the Iranians need; and to install the primary and secondary steam generation circuits. Later on, new contracts could be signed for the production of fuels. For the plants' first fuel charge, Iran already has a contract with Urenco (a company with German, British, and Dutch capital, headquartered in Almelo, in the Netherlands) for the necessary uranium enrichment.

It will be very difficult for the Brazilian Government to resist Iranian pleas for collaboration in its nuclear program because, among other things, Brazilian companies are on the verge of closing the following deals: an \$800 million contract for construction, by the Andrade Gutierrez Construction Company, of the Karan 3 hydroelectric plant; a \$700 million contract for Mafersa to supply cars for the Tehran metro; a contract for the Zanini company to furnish seven sugar and alcohol plants, at an estimated value of \$700 million to \$800 million; and the possibility of a slice of a mammoth contract to rebuild several cities and highways, with a total value of several billion dollars.

[Box, p 10]

KWU Doubtful

Christian Klose, KWU representative in Brazil told CORREIO BRAZILIENSE yesterday that he does not believe Brazil is equipped to provide the engineering services needed to complete the two Iranian nuclear plants and, even if it were possible, he feels that the Brazilian-German Nuclear Accord would prohibit Brazil from passing the technology that was transferred to it by

Germany on to a third country that the German Government itself has cut off. Francisco Noronha, vice president of Abidan (Brazilian Nuclear Energy Association), disputed Klose's opinion and assured that Nuclen has the capacity to provide the engineering services for completion of the plants and that, through Nuclep (Nuclebras Heavy Equipment, a subsidiary of the National Nuclear Energy Commission [CNEN] located in Itaquai, Rio de Janeiro) and other national industries, Brazil is also capable of manufacturing 65 percent of the secondary circuit equipment and 100 percent of the primary circuit equipment to generate steam for a nuclear plant.

Luiz Fernando Benetini, spokesman for Itamaraty, assured yesterday that the nuclear question is not on the agenda of Minister Rezek's meetings with Iranian officials next Monday, Tuesday, and Wednesday.

Given the similarity of the Angra II and III projects to Buschehr I and II, if Brazil does not agree to the deal proposed by Iran, it will only be for political reasons, because, according to those in the sector, from an economic and technological standpoint it could be the salvation of the Brazilian nuclear industry. Nuclen and other companies are about to demobilize a highly specialized labor force, trained during the 16 years in which the Brazilian-German Nuclear Accord has been in effect.

Argentine Quality Control Center Transferred

92WP0073B Sao Paulo GAZETA MERCANTIL
in Portuguese 6 Nov 91 p 12

[Article by Paulo Totti]

[Text] Buenos Aires—Latin America's most advanced industrial quality control center for processes and services is being transferred from Argentina to Brazil. What it involves is a project for nondestructive testing and quality testing which until now has been carried out by Argentina's National Atomic Energy Commission (CNEA) under the supervision of the International Atomic Energy Agency (IAEA) but which will now be expanded and set up in the city of Limeira in Sao Paulo State—150 km northwest of Sao Paulo—under the sponsorship of the United Nations.

In Argentina, the project—known technically as RLA 8/005—specialized in quality control in connection with nuclear activities for peaceful purposes, and over the past two decades, it has trained over 20,000 engineers and technicians from 18 countries in Latin America and the Caribbean.

There are two reasons for transferring it to Brazil: first, the countries in the region have decided to expand the project's objectives so that it will now be concerned not only with nuclear quality control but also with "total quality control," meaning that it will embrace all the other technological disciplines. And Limeira is best suited to be the site of the project, since it is a model

municipality on the continent because of its infrastructure with respect to water, sewage, and electricity (it is the first Brazilian city where water and sewage are almost 100-percent treated) and because it is located in a region with a highly developed metal engineering industry—the immediate beneficiary of the services that the new center will be able to provide.

To house the project's facilities, the Limeira municipal government, with the cooperation of 92 firms in the region, is constructing a building that will be ready in March of next year. Laboratories having everything they need to test equipment and the quality of life will be installed on 100,000 square meters of land. The center's main purpose, however, will be to train specialized manpower in the field of quality engineering.

"Nondestructive testing" is the technical name for a method of testing durability, fatigue strength, and adaptation to operating conditions which can be carried out without damaging the product—or interrupting the service. "To explain it simply and unscientifically, it would be like taking a tomogram of the human body so as to make a diagnosis with no need for surgery," says diplomat Zuhair Warwar, coordinator of studies and development for the Brazilian Cooperation Agency (ABC), which is the agency of the Ministry of Foreign Affairs in charge of contacts with the UN Development Program (UNDP).

In Brazil, Petrobras is a pioneer in the development of nondestructive testing, which it first used to test the quality of drill bits. The government-owned petroleum company helped establish the Brazilian Association for Nondestructive Testing (ABEND), which, with the participation of private firms, has set up quality control labs at various places around the country. The intention is to centralize those activities in Limeira.

All financial contributions by the UNDP to the Limeira project—which now has the new name of RLA 8/017—will be outright grants. The Limeira municipal government will provide the infrastructure necessary for operating the center. Since UN contributions cannot go to state-owned organizations, the Limeira Foundation has been established with the participation of domestic firms and entities involved in quality control and nondestructive testing. That foundation will administer the center's funds.

The mayor of Limeira, engineer Palmiro Paulo Veronesi D'Andrea (PRN [National Reconstruction Party]), who is in Buenos Aires to oversee the transfer of equipment and visit the project facilities operated by the CNEA, said that transforming his municipality, which has a population of 250,000, into a center for advanced scientific development with a "large aggregation of gray matter" is a desire he has been nourishing since the 1960's, when he was first elected. This is D'Andrea's third term as mayor.

Difficulty in Passage of Nuclear Accord Seen

Vienna Still on Agenda

92SM0136Y Sao Paulo GAZETA MERCANTIL
in Portuguese 23-25 Nov 91 p 3

[By Maria Helena Tachinardi]

[Text] Brazil and Argentina concluded a comprehensive safeguards agreement last week with the International Atomic Energy Agency (IAEA), headquartered in Vienna, Itamaraty's Secretary General for Foreign Policy Marcos Azambuja announced on Friday.

The document cannot be signed, however, until after Congress ratifies the agreement for exclusively peaceful use of nuclear energy that was signed last year in Foz do Iguacu and complemented this past July by the creation of the Brazilian-Argentine Agency for Accountability and Control of Nuclear Materials, (ABACC), in Guadalajara (Mexico) during the first Iberian-American summit meeting.

The Argentine Congress has already ratified the agreement. President Carlos Menem will only travel to Vienna to meet with President Fernando Collor de Mello if the National Congress approves the bilateral agreement. That would enable the two countries to sign the comprehensive commitment with the IAEA that will permit Brazil and Argentina to safeguard their industrial and technological secrets, and even to build nuclear-propelled vehicles like the nuclear submarine.

This newspaper has learned, however, that it is unlikely that the Brazilian legislature will approve the Brazil-Argentine agreement before its current session ends. Despite the difficulties of winning approval, Itamaraty is counting on that possibility and has already included a stop in Vienna on President Collor's calendar for December. It would occur on the 13th, after his visit to Rome on the 11th and 12th.

It will be harder to get the Brazilian Congress to approve the agreement with the IAEA than the bilateral agreement with Argentina. That is because the latest Chamber of Deputies Congressional Investigation Committee (CPI) on nuclear affairs concluded that inspection of Brazilian nuclear energy activities by international bodies would not be welcomed, as those activities are considered to be internal affairs of this country.

Preservation of rights of access to nuclear technology was a victory that the Brazilians and Argentines won after months of negotiation with the IAEA, which has signed agreements, similar to the one that Brazil and Argentina will sign, with major powers that are not militarily nuclearized, such as Japan, Sweden, and Germany, Azambuja commented.

The safeguards agreement with the IAEA will enable the agency to check whether the commitments assumed by the two countries, i.e., to pursue only the peaceful use of

atomic energy, are in fact being observed and that no nuclear materials are being diverted to war purposes.

According to what this newspaper has learned, the safeguards agreement will not hamper the technological development of Brazil or Argentina. Both will be able, if they so desire, to enrich uranium in order to make the bomb, but the commitment they have assumed is not to make one. The control is exercised over the materials, not the technology, a diplomatic source pointed out.

"We have tried to couch the accord so as to preserve development of technological capabilities and the possibility of doing research, and so far we have succeeded, through a great deal of effort," the source added.

On 9 December, Brazil and Argentina will meet with the Binational Commission on Nuclear Energy in Buenos Aires. The two countries have been cooperating in this field since the end of 1985.

Opposition in Congress

92SM0136Z Sao Paulo GAZETA MERCANTIL
in Portuguese 27 Nov 91 p 15

[By Maria Helena Tachinardi]

[Text] The head of the Strategic Affairs Secretariat, Pedro Paulo Leoni Ramos, will testify tomorrow before the Chamber of Deputies Committee on National Defense concerning the agreement that Brazil and Argentina plan to sign with the International Atomic Energy Agency (IAEA), whose headquarters are in Vienna.

The subject is arousing a great deal of controversy in Congress. Deputy Mauro Borges (PDC-GO [Christian Democratic Party—Goiás State]), a member of the Committee on National Defense and author of a formal request calling Leoni Ramos to testify, considers the agreement with the IAEA that was concluded last week an "innocuous signature" ["assinatura branca"] of the famous Treaty on the Non-Proliferation of Nuclear Weapons (TNP), which has been systematically repudiated by all Brazilian governments since its implementation on 1 July 1968.

In Borges's opinion, the "intervention by the IAEA" might permit the group of seven most industrialized nations, (the G-7), to interfere with Brazil's autonomous technological development.

If Presidents Fernando Collor and Carlos Menem are to sign the safeguards agreement with the IAEA on 13 December, the Congress must approve the bilateral Brazil-Argentina agreement on the peaceful use of nuclear energy, signed in Guadalajara in July of this year.

Legislators say it is unlikely that this accord will be ratified before the 13th. It has already passed through the Committee on Foreign Relations, which debated the

merits of the document. Since Friday it has been proceeding simultaneously through the committees on national defense and science and technology.

Not until the end of that process will it be sent to the Committee on the Constitution and Justice, which pays more attention to the form of a measure than to its content.

Advisors to the Committee on Science and Technology told this newspaper that the subject will not be handled in haste, because it is a delicate one. But they add that the accord is good for Brazil because "it is an insurance policy against an attempt to persuade us to sign the TNP." The problem is not the Brazil-Argentina mutual verification agreement, but the one the two countries intend to sign with the IAEA, say those same sources. At Itamaraty, diplomats are also worried about the problems that the agreement with the IAEA will face in Congress. Waiting for legislative approval are about 30 accords signed with Argentina.

Uranium Enriched by Laser on Lab Scale

92WP0073A Brasilia CORREIO BRAZILIENSE
in Portuguese 29 Oct 91 p 11

[Article by Laercio Silva]

[Text] Brazil has just taken an important step in the mastery of nuclear technology with its discovery of the process for enriching uranium by laser. That technology has been sought by scientific powers such as France and Japan for at least two decades. The process was developed by the Institute of Advanced Studies at the Aerospace Technology Center (CTA) in Sao Jose dos Campos, Sao Paulo. With its mastery of the technology, Brazil can become an exporter of enriched uranium to countries lacking fuel of their own for nuclear power plants.

Unlike the "official" nuclear program centered on the Cooperation Agreement for Peaceful Uses of Nuclear Energy, which Brazil has had with Germany since 1975, the "parallel" nuclear programs have been producing surprising results in recent years. Merely to reach the uranium enrichment stage of the nuclear fuel cycle, the parallel programs in question achieved two important victories. The first was when the Navy succeeded in mastering the centrifugation technology at its research center in Aramar, near Sorocaba in Sao Paulo. The second was this discovery by the Ministry of Aeronautics in cooperation with Campinas State University (Unicamp) at its Institute of Advanced Studies in Sao Jose dos Campos.

The Ministry of Aeronautics had been researching uranium enrichment by the laser process for about 15 years. The man who thought up the process in its Brazilian version was the late Prof. Sergio Porto, who headed Unicamp's Center for Laser Studies. He acquired the concept for the process through scientific exchanges with colleagues in the Soviet Union. He kept his scientific

secrets locked in a safe in his classroom at Unicamp, and only he and the rector of the university knew the combination. After he died, his followers took over the contract with the Ministry of Aeronautics.

This Brazilian discovery is bound to receive a lot of attention in scientific circles and the specialized press, mainly because it has been confirmed by the minister of aeronautics, General Socrates Monteiro. The reason is that uranium enrichment by the laser process is the definitive solution for ensuring an abundant low-cost supply of that strategic material for the nuclear industry. If the Brazilian researchers can make the process work on an industrial scale—what they have done so far is enrich uranium in the laboratory—Brazil may flood the international market with enriched uranium, since the laser process is theoretically much cheaper than centrifugation, which is the cheapest of the three processes currently in use on an industrial scale. It was developed by the Navy and adopted by the European consortium Urenco, which is one of the market's chief suppliers and from which Brazil also buys enriched uranium for use in the Angra nuclear power plant.

With this success by the Ministry of Aeronautics, Brazil now possesses three of the four known technologies for enriching uranium. Besides the laser process and centrifugation, Nuclear Industries of Brazil (INB, the former Nuclebras) is building a commercial demonstration plant for enriching uranium by the jet nozzle process, which it received from the Germans as part of the nuclear agreement.

Technological success aside, it remains for the Ministry of Aeronautics to explain what its purpose was in developing a new uranium enrichment process. The INB's reason is clear enough: it wants to supply our nuclear power plants, since it is the organization responsible for providing the fuel. For its part, the Navy is carrying out—also with German cooperation—a project for the domestic construction of a nuclear-powered submarine in the medium term and claims that it needs to develop a reliable technology for enriching uranium to 20 percent in order to operate the compact nuclear reactors used in submarines and ships.

Since the Ministry of Aeronautics cannot claim that it is thinking of building nuclear-powered aircraft, there is room for speculation concerning the possible military purpose of its research. Its project, developed in Sao Jose dos Campos, is the one with the greatest military potential because it makes it possible to produce large quantities of highly-enriched uranium, and that would demolish 80 percent of the obstacles to be overcome by anyone thinking of producing atomic weapons.

Process Alters Nature of Uranium

Although uranium in its natural state can be used as a fuel in some types of nuclear reactors, the most widely used technology in the world today requires that it be "enriched." In other words, of uranium's two main isotopes (atoms of the same chemical element but with a

difference in mass), the percentage of uranium-235, which in nature accounts for only 0.73 percent of the total mass, must be increased to approximately 3 percent in the case of fuel produced for use in conventional nuclear power plants (the Angra plant, for example), to about 20 percent for use in compact reactors like those used in submarines and ships, and to over 70 percent for the production of nuclear weapons—what is popularly called the atomic bomb.

Theoretically, that separation cannot be achieved by chemical processes, since despite the difference in mass, the chemical behavior of fissile uranium-235 and of nonfissile uranium-238, which accounts for the other 99.3 percent of the total mass, is identical. The separation methods used are therefore physical. In all known processes, the uranium is initially converted to a gas called uranium hexafluoride, the manufacturing process for which has also been mastered by Brazil on the basis of research conducted by the Institute for Nuclear and Energy Research (IPEN) in Sao Paulo.

Since it is volatile, the gas is centrifuged when centrifugation is the enrichment process being used; pumped through fine membranes in the gaseous diffusion process used in the United States, France, and the Soviet Union; injected through curved nozzles in the jet nozzle process; or bombarded with a laser beam in the laser process. The gas molecules in U-238, being slightly heavier, tend to concentrate on the periphery as the result of the centrifugal force applied in the three first-named processes and are then collected and reinjected in subsequent stages, the process being repeated thousands of times until the desired level of enrichment is achieved. The laser process is scientifically possible because the beam is calibrated so that its resonance is identical to the frequency of one of the uranium molecules making up the gas, since they differ from each other.

Prepilot Laser Enrichment Project Funds Sought

92WP0074B Brasilia CORREIO BRAZILIENSE
in Portuguese 1 Nov 91 p 10

[Text] The Aeronautics Ministry is negotiating with the Presidency of the Republic for the release of \$15.7 million to install a prepilot plant for the enrichment of uranium using a laser beam, a technology recently developed by the Institute of Advanced Studies, of the Aeronautical Technology Center in Sao Jose dos Campos, Sao Paulo. The plant, which is essential to test and improve the enrichment technology, will have the capacity to vaporize 4 kg of metallic uranium per hour.

According to the proposal of the Aeronautics Ministry, the prepilot plant should be in operation at the beginning of 1993 and will cost the Treasury another \$2 million a year for operating expenses. After this will come the pilot plant, which will assess the technology from the industrial standpoint, and which is planned to go into operation at the beginning of 1995.

The process of uranium enrichment by the selective ionization of the atomic vapor by laser irradiation is considered the most suitable method for the next century, because it requires less electrical energy and would make it possible to produce a larger quantity of enriched uranium. Only three other countries are studying this process for uranium enrichment: Japan, France, and the United States. Apparently, only Brazil has reached the point of being able to announce the discovery.

Initiated in 1974, the research is going through a difficult phase for lack of funding. This year only \$18 million was allocated to the Institute of Advanced Studies to pursue the research, but in 1990 the allocation was a puny \$500,000, only enough to take care of bureaucratic matters. Over the last 11 years, the so-called parallel program for nuclear power has received \$411 million, most of which was applied to research on the fuel cycle and enrichment by the ultracentrifuge method.

Brazil's Principal Nuclear Goals

1. Mastery of the nuclear fuel cycle, on a pilot scale, moving to the phase of industrial demonstration.
2. Mastery of the technology for construction of PWR (pressurized water) reactors, including construction and operation of a Brazilian research reactor at the IPEN (Institute for Nuclear and Energy Research).
3. Mastery of the technology to obtain special materials for the development of superconductors, permanent magnets, special types of glass, neutron detectors, high-yield chemical filters, and semiconductors for refined electronics.
4. Development of the first high-powered linear electron accelerator, the only one in South America, with industrial applications, and one that would permit the practical training of nuclear physicist and engineers at the doctoral level. The first stage will be initiated by the end of this year.
5. Development of special metal alloys with applications in electronics, precision mechanics, and the chemical industry.
6. Development of rare-earth ceramics that are highly resistant to temperature changes and with specific physical characteristics for metallurgical, electronic, and electrical applications.
7. Development of vacuum pumps for gases and liquids, magnetic bearings with zero friction, magnetic flow pumps for metals, and high-tech components.
8. Uranium enrichment by the laser method, at the laboratory level.

Angra II Nuclear Plant Privatization Sought

*PY0612154291 Sao Paulo FOLHA DE SAO PAULO
in Portuguese 4 Dec 91 Section 1 p 7*

[Report by Francisco Santos of the Rio de Janeiro bureau]

[Text] The government wants to privatize the Angra II nuclear plant (in Angra dos Reis, 155 km from Rio de Janeiro) so that its construction can be concluded. Jose Luiz Santana de Carvalho, president of the National Nuclear Energy Commission (CNEN), stated that \$800 million of the \$1.5 billion required to complete the project is being sought from the private sector.

The possibility of making the private sector the majority shareholder in the plant is not excluded within the negotiations that the government wants to conclude "within three or four months."

Carvalho said that a group of Brazilian bankers and construction people have shown "considerable interest" in participating in the project.

Carvalho said that there is interest in including foreign partners, on an equal basis with national enterprises, in the termination of the plant.

Carvalho said that Angra II is already 80 percent completed and \$3.5 billion have been invested in the plant. The government plan foresees that the new owner of the plant would contract Furnas Electric Power Plants Inc., which currently operates Angra I, to operate the nuclear plant. Furnas could even be a minor shareholder in the plant.

The project foresees the construction of Angra I, II, and III. Currently only Angra I has been concluded and it is operating at half of its nominal 600 kw capacity. The plant is currently closed for a change of fuel.

Regarding the sale of Angra III's equipment to Iran, Carvalho says that the idea "is interesting from a commercial viewpoint, but not from a political one." He says that the viability of the negotiations would first require Iran to become more integrated with the international nuclear community. Considering that the commercial exploitation of the plants are not the CNEN's concern, Carvalho said that he prefers not to negotiate with Iran.

Nuclear Submarine Project Beshet by Delays

*PY1012232891 Sao Paulo FOLHA DE SAO PAULO
in Portuguese 8 Dec 91 Section 1 p 20*

[Report by Brasilia Bureau Chief Gilberto Dimenstein]

[Text] An official document that has fallen into FOLHA DE SAO PAULO's hands reads that from 1979 to August 1991 the nuclear submarine project being developed by the Navy already has absorbed 407.5 billion

cruzeiros (\$440.6 million). But, according to Navy Minister Admiral Mario Cesar Flores, at least 1.187 trillion cruzeiros are still needed to make the submarine operational.

The deadline has been changed so many times that the Navy Ministry does not know when the project will be completed. The minister says that from an "optimistic" viewpoint, the submarine will be submerged in Brazilian waters in the year 2005, in other words, within 14 years. FOLHA DE SAO PAULO questioned the technicians involved in the project and they said that if the current allotments pace continues, the year 2010 would be more realistic.

According to official data, 93.1 billion cruzeiros were spent in 1990. And according to the Navy Ministry, 113.3 billion will be spent this year. The expenditure for the nuclear submarine does not figure as such in the federal budget sent to Congress; it is found under the heading of "refurbishment."

The idea of building a nuclear submarine emerged in 1978, when the military, discontented with the Brazilian-German Agreement, decided to include it in the parallel nuclear program. The initial forecast was that the first submarine would be operational in 1995. Afterward, the deadline was set for the year 2000, but, according to Minister Flores, the year "could be" 2005. Technicians consulted by FOLHA DE SAO PAULO are betting on the year 2010.

The project is being developed in two states: Sao Paulo and Rio de Janeiro. The center involved in the enriching of uranium is in Aramar, Ipero District (125 km west of Sao Paulo).

According to Flores' "optimistic" forecast, the prototype will be ready for dry dock in the year 2000. In other words, the submarine's reactor will be functioning in an experimental form in dry dock. Within a five-year period the submarine will be built and appropriately loaded with torpedoes.

A conventional model, which is much cheaper than the nuclear model, today costs \$200 million. In an interview with FOLHA DE SAO PAULO, Flores lamented the project's delay: "It is Brazil's industrial sector that comes out the loser with this delay."

According to Flores, the submarine is the Navy's goal and this justifies its inclusion in the nuclear program because the nuclear energy will become part of the Brazilian economy, thus representing "technological progress." For Flores, the project has nothing to do with the atomic bomb. "There is a lot of ignorance in this respect," he said. He stated that the submarine will run with nuclear energy, something that will be fully accepted by the International Atomic Energy Agency (IAEA).

But Itamaraty suspects that part of the United States' resistance in transferring more advanced technology is

due to the North Americans' apprehension regarding Brazil's nuclear ambitions. This apprehension led Flores to send a secret letter to Foreign Minister Francisco Rezek telling him that the whole project can be inspected by the IAEA.

SAE Preparing Nuclear Policy Bill

PY0512200691 Sao Paulo FOLHA DE SAO PAULO
in Portuguese 3 Dec 91 Section 1 p 7

[Report by Sonia Mossri and Sylvio Costa]

[Text] Over the next few days the Strategic Affairs Secretariat (SAE) will send to Congress a bill outlining the Collor government's nuclear policy. Pressed by the military, the SAE dropped a bill creating a committee to review operating conditions in the nuclear area, with powers similar to those vested in the National Commission for Nuclear Energy.

Under pressure by the U.S. Government, the SAE, along with the Foreign Ministry and the Science and Technology Secretariat, also is preparing a bill restricting exports, technological transfers, and rendering of services of sensitive material abroad.

CHILE

Minister Rojas Confirms Origin of Arms Shipment

Shipped From Chile

PY1112180091 Santiago Radio Chilena Network
in Spanish 1600 GMT 11 Dec 91

[Text] Defense Minister Patricio Rojas has confirmed that the weapons bound for Yugoslavia which were seized in Hungary were shipped from Chile.

Rojas said that the subject is being handled in a very responsible manner in order to determine who is responsible for this case.

[Begin recording] [Rojas] That is all. The weapons were shipped from Chile, and it is understood that the shipment probably is the one found in Hungary.

[Unidentified speaker] [Question indistinct]

[Rojas] [Words indistinct] the circumstances under which this took place; who is involved; whether any civilians, soldiers, or national defense institutions currently are being investigated. [end recording]

Minister Rojas refused to comment on whether the weapons were shipped with the necessary authorization. When asked about this, he answered that he believes the defense minister has all the necessary information at hand.

The weapons shipped from Chile and seized in Hungary were bound for Zagreb, capital of Croatia, according to

sources which confirmed that the plane that transported them belonged to a U.S. company.

The Boeing aircraft that landed in Budapest on 1 December belongs to an airline based in Florida, United States

Sources close to the Yugoslav authorities said that the necessary conditions to close a legal deal had been achieved, but an unidentified problem forced the cargo aircraft to land in Budapest.

It was then established that the documents mentioning Nigeria as the final destination were forged. The documents had to be forged because Hungary had joined the arms embargo against Yugoslavia, thus making it impossible to ship 11 tons of weapons and explosives of various origins to Zagreb.

More Details on Arms Shipment

PY1212030691 Santiago Television Nacional de Chile Network in Spanish 2330 GMT 11 Dec 91

[Excerpts] It has been confirmed that the arms shipment confiscated in Hungary left Chile with documents issued by the Military Hospital [as heard]. The defense minister said that investigations are being carried out to find those responsible for the shipment, whether civilian or military.

Many reporters gathered this morning in front of the Army Ordnance, Famae, building after learning through several reports that the arms shipment confiscated in Hungary had left from this place. It was announced yesterday that Famae today would exhibit its projects and that the Army commander would attend the exhibition. However, the Army press office today told the media that General Pinochet will not attend the exhibition and that journalists are not allowed to attend.

However, the version that the Army is responsible for this international deal is increasingly becoming stronger. This action may even cause a sanction by the UN Security Council, which ordered an embargo on the sale of weapons to Yugoslavia. [passage omitted]

It has been established that a foreign company bought the arms from Famae to send them originally to Sri Lanka, and that the 11-ton shipment consisting of LAW [Light Antiarmor Weapon] rockets and bazookas was loaded on 30 November on a charter plane from the U.S. airline Florida West. However, the airplane changed route and after trying to land in Zagreb, capital of

Croatia, it had to land at the airport in Budapest, Hungary, where the shipment was confiscated.

According to reports from Budapest, the arms boxes and documents bore the seals of the Santiago Military Hospital, apparently with the purpose of camouflaging the arms to make them look like a humanitarian aid shipment. Does this mean that the Army knew the weapons' final destination? This is one of the points that must be clarified in the investigation carried out by the Defense Ministry. Another question is: How can such an arms shipment leave Chile from its main airport?

[Begin recording] [Caption identifies Air Force Chief of Staff General Ramon Vega Hidalgo] Well, without doubt, considering that the cargo was not that declared in its documents, it means they were forged documents, a serious fact.

[Unidentified reporter] General, doesn't the Air Force control the shipments in this case?

[Vega] No, the Air Force is not supposed to make this kind of control. This is a Customs problem. [end recording]

Several reports are circulating in Budapest but no official communique has been issued yet in this respect. However, it is thought that the investigation already has concluded and that the results soon will be given to the Chilean Embassy in Hungary.

Meanwhile, Army Deputy Commander Lieutenant General Jorge Lucar confirmed that an internal investigation is being carried out in his force to determine the origin of the weapons confiscated in Hungary.

[Begin recording] [Unidentified reporter] It is said that the weapons confiscated in Hungary come from Famae. Do you know anything about this?

[Lucar] No, I cannot give you a concrete answer to your question. I do have some reports, but no military information. This is, of course, being investigated. The first thing that must be done once all the information is collected is to inform the Army commander. This will probably happen tomorrow afternoon or the day after tomorrow. A complete investigation must be carried out.

[Reporter] Has a legal process been opened?

[Lucar] No, not at all. This is only an investigation as it corresponds and as stated by the defense minister. [end recording]

EGYPT

Officials Call for Arab Nuclear Progress, Secrecy 92AE0072B Amman SHIHAN in Arabic 26 Oct 91 p 12

[Article: "Arab Nuclear Capability, the Lies of Blockade and Costs"]

[Text] President Husni Mubarak has announced the stoppage of the peaceful nuclear program in Egypt. As an immediate consequence of this, a clamor arose warning against the danger of this move. These statements are similar to Western statements, which are a mix of anticipation and warning against Arabs possessing the nuclear weapon, because of the outbreak of war against Iraq, the attempt to search and destroy its nuclear capabilities, and impose a Western blockade through the UN against Iraq and other developing countries "with the exception of Israel," so that none of these nations will have, or try to have, this weapon. The new item is that the West does not want an Arab nuclear capability, not just in the military, strategic, and political sense, but also in the peaceful developmental and economic sense. Through control over international lending and financial agencies, Western conditions have been slipped in to thwart and stagnate any Arab nuclear project, as well as to blockade it.

Experts, technicians, and military specialists confirm that the Western blockade could be breached, and they delineate the conditions for that. We also have the technical and technological components and raw materials required to manufacture the Arab capability. We do not lack the financing, so much as we lack the political will and the clarity of strategic vision.

Everyone emphasizes that Arab political reality is not capable—now—of establishing an Arab nuclear weapon as a strategic deterrent in the conflict with the Zionist entity. This does not deny the need, or rather, the duty to construct peaceful nuclear power plants whose role would be for development and to share in the atomic industry pursuant to development in the future.

In regard to this issue, what do experts in that field say?

Crisis of Decision

Present circumstances are not propitious to achieve an Arab nuclear weapon. There are many obstacles in the path of this goal. This statement was made to me by military and strategic expert Staff Major General Tal'at Musallam, who went on to say: "I think that it would not be impossible to produce and manufacture this weapon, if we were convinced of the need for it, through debate and through a conviction of the necessity of creating a military balance with Israel. Regarding the elements that this industry would require, you will find that Egypt and Iraq have made great strides on the scientific level, to the extent that Iraq was very close to, or on the verge of, achieving this goal. Therefore, I believe that the most important thing that must be done is to preserve the

expertise and knowledge that Arab intellect has achieved in nuclear technology, and to complete the installations and materials. All of this will contribute to producing the Arab nuclear weapon. Unfortunately, as we know, Iraq is under nuclear supervision. Instead of Arab silence contributing to its destruction, Arab agencies must obtain Iraq's expertise and industries. We must now think about constructing new nuclear facilities, as a pledge of political decision and will, which must strive to build nuclear power plants and reactors."

Maj. Gen. Musallam added: "The cadre that undertakes this construction must be Arab. It is possible to ask foreign experts for assistance, but caution is necessary, because the international environment is not propitious."

With regard to importing the components of a nuclear weapon, Maj. Gen. Musallam feels that it is preferable to deal with individuals rather than nations, despite the nations' advantages, because political circumstances contribute to their inconsistent positions. "Moreover, the nuclear material required for the weapon is one of the products of the reaction required for energy and, consequently, it would be possible to obtain it easily from individuals in its peaceful form. The nuclear material can be found on the international market, but the circle where one can obtain it is restricted, which makes it a secretive, complex process that cannot attract attention, because it could be a violation of the international embargo imposed on that material. Accordingly, this should not be left to one state, but rather, should be dealt with as a regional responsibility to produce, manufacture, and protect this goal, so that our nuclear project does not become a target for a foreign attack."

Joint Responsibility

Concerning Arab technological resources that might be available, Dr. Hasan Nafi'ah, professor of political science in the College of Economics and Political Science at Cairo University, stated: "Resources are available, but the question is, should the burden of manufacturing an Arab nuclear bomb be put on one country? I think that the responsibility should be a joint one, politically and strategically, among the Arab nations. Nevertheless, this would be no easy matter, inasmuch as the Arab states differ among themselves on how to resolve the Palestinian issue, 'by a peaceful settlement, or by a strategy of steadfastness, or by the deterrent strategy.' The question raised is how to crystallize an Arab regional agreement on manufacturing the nuclear bomb. This would—realistically—be difficult to achieve in the midst of an Arab climate charged with disputes and tension. After what happened to Iraq, the Arab states will think twice before manufacturing and producing nuclear weapons. It would be erroneous to believe that we lack resources or technical expertise. The weapon is not an American monopoly alone. On the contrary, the technical expertise is available and is not a monopoly of the West. It is well-known that India has a high level of expertise in nuclear bomb manufacturing and, consequently, from

the political aspect, one could find an outlet to compensate for any deficiency in technical expertise. On the other hand, it is said that international monitoring is increasing; America is pursuing harsher measures and is putting pressure on all parties, so that no nuclear cooperation takes place, especially with regard to the Arabs. I think that this supervision is illegal, inasmuch as it prevents the Arabs from producing and manufacturing nuclear weapons. The Iraqi nuclear program was developed with the assistance of French technical expertise. This cooperation continued until Israel destroyed the Iraqi reactor in 1981. Nevertheless, Iraq continued and was successful in developing its nuclear program. Even if the Gulf war had not occurred, the West most likely would have disarmed and blockaded Iraq. I don't think that there is any party in the world that has the power and structure to control this capability and this nuclear weapon. Gaps exist and are found in this international order, whose features have not yet crystallized, despite American influence."

Clarity of Vision

Staff Brigadier General Murad al-Dassuqi agrees with the previous opinion. "In order for us to build a nuclear weapon, a financing and technological base must be available, along with the technical material required to build this weapon and to manufacture the fissionable material to cause the nuclear explosion. In addition, there must be scientific cadres in the nuclear field to use these nuclear sciences. This required material can be found in the Arab states, particularly the Egyptian, Iraqi, and Syrian cadres."

"Even resources not available to the Arabs could be obtained in many ways. As for the main impediment, everyone agrees that it lies in making the decision and then being able to safeguard this decision from outside influences. It has to be kept secret so that the project is not aborted in its early stages."

Brig. Gen. Murad al-Dassuqi added that, if the Arab nations were able to achieve their nuclear industry on a specific level that would make it difficult to attack, particularly after production, "no power would be able to attack our project. At this point, I would underscore bringing together an Arab political will commensurate with clarity of vision in the long term. This is required in the near future. Every nation that has succeeded in manufacturing and producing atomic energy possessed clarity of vision, no matter what sacrifices it cost. Scientists can be obtained, even from countries like Pakistan and India. Despite the international climate's bent toward Israel and its interests, and despite the multiplicity of surveillance methods, we could avoid detection by surrounding our work with secrecy. As an example, as Arabs we could implement a long-range plan that could develop peacefully in the future."

Regarding the matter of the Arabs' possessing a nuclear weapon as a strategic deterrent vis-a-vis the Zionist entity, al-Dassuqi stated: "Talking about Arab regional

security—now—has become a waste of time, in light of Israel's possession of this weapon, because it has no less than 200 nuclear bombs with which to threaten the Arabs. Duty requires that Arab regional security rely on balance in the nuclear field. With conventional weapons the Arabs face unconventional weapons. This tips the balance of the conflict in favor of the Zionist entity."

The Nuclear Weapon, Peacefully

Despite the military importance of the nuclear weapon to the Arabs, political decisions in the Arab region have avoided it, especially after the Gulf war. The greatest danger of that is the caution that has surrounded the nuclear program for peaceful purposes.

Concerning the views of technicians and specialists on the possibility of creating nuclear energy on the Arab level, to be used for peaceful and regional purposes, Dr. Husayn 'Abd-al-Muhsin, former head of the Egyptian Atomic Energy Commission [EAEC], stresses that "from the expertise and execution aspects, nuclear fuel—upon which any nuclear program must rely—is the basis of the entire process to produce energy. This fuel is represented by uranium, which the EAEC was and still is making efforts to discover and extract."

"Since the establishment of a section for geology and atomic raw materials in the EAEC, until independent specialization and organizations in the energy field were established in 1977, we have been searching in Egypt's deserts in the hope of finding atomic raw materials. We have surveyed large areas, or rather, we have covered 30 percent of the total surface of Egypt, by means of aerial radiation surveys. This percentage was chosen because it contained the best possibilities, especially in the eastern desert areas, according to precise studies that have been conducted. Through hard work over 30 years, we succeeded in attaining technical skills, cadres, and high expertise specializing in the field of fissionable materials. We have specialists in exploration, extraction, and analysis. We succeeded in learning everything required to launch a program of atomic energy exploration and, consequently, we now have generations who have attained a high scientific level and who can continue on this course."

"As a consequence, we have concluded that uranium exists in our granite formations in the eastern desert, since these formations carry uranium of considerable importance. Accordingly, we have begun to ascertain precisely the possibility of this in the areas of Jabal Qattar, northwest of al-Ghardaqah; al-Misikat and al-['Uraysidiyah], halfway between Qina and Safaja; and finally, in the area of Umm Ara', southeast of Aswan, where the existence of quantities of uranium has been proven by sightings and verification."

Other Methods

Husayn 'Abd-al-Muhsin went on to say: "In principle, we estimate that there are 14,000 tons of uranium as an initial guess, according to the International Atomic

Energy Agency [IAEA]'s system, which is comparable with other regions of the world. Moreover, detailed studies are now being conducted in regard to digging and mining operations, in order ultimately to define this quantity precisely. The number will not be zero, and it will not be very far from 14,000 tons. With regard to other methods, we have a project to extract uranium from phosphate; the feasibility of extracting uranium from this mineral has been proven. There is a project under study, and final approval is expected."

"This energy is now the basis for development in the world. Perhaps France's scientific progress and industrial revolution resulted from its reliance on nuclear energy for 75 percent of its total energy needs. IAEA reports also indicate that 20 percent of the world depends on atomic energy. I would like to caution the Arabs here that oil will be depleted someday—10, 20, 30 years at most, no matter how much experts differ. Reliance on nuclear energy now will help us avoid disasters and dependence on the outside world in the future. On the contrary, the more we procrastinate in starting our nuclear program, the more the cost and difficulties increase in achieving that program in the long run. Perhaps it should not be termed difficult to achieve. We have the expertise and the human, technical, and material resources. We must also follow the example of the countries of the rest of the world, all of which are heading toward the construction of nuclear power plants."

Colonialist Plots

Dr. Munir Mujahid, director of the Studies Administration in the Nuclear Power Plant Agency, warns that the absence of nuclear power plants means capitulation to colonialist plots that have been an obstacle in the path of introducing nuclear technology into Egypt and the Arab nation since 1960. This confirms the retention of this kind of energy in the hands of imperialist nations, and makes us continue in stagnate subordination to the West. Dr. Munir Mujahid believes that there is a global tendency toward reliance on using nuclear power, both on the level of advanced and developing nations, because everyone has begun to understand the benefits of these plants in obtaining cheaper electricity in a more reliable way. There is increased confidence in nuclear reactors. Dr. Mujahid rejects expansion of thermal plants that rely on the use of coal or gas, because they are harmful to the environment, since these plants produce carbon dioxide gases and toxic, acid-rain emissions that damage the ozone layer. All of these poisons do not occur in nuclear plants. We can avoid other kinds of disasters from power stations and contribute to our advancement without wasteful reliance on the West. It should be emphasized that we have successful examples in dealing with advanced technology; we have the capability to protect our nuclear reactors in the future, with our proficiency and skill in maintaining the security and performance of these plants.

Programs Under Implementation

Dr. Hafiz Hajji, deputy chief of the Egyptian Military Atomic Energy Commission stated: "Since 1984, we have conducted detailed studies of the local possibilities for manufacturing nuclear power plants to generate electricity. Our interest is in medium-capability nuclear reactors, and we have the ability to manufacture its small components locally. These reactors do not require large investments. As for the nuclear fuel required by the reactors, it is the natural form of uranium and requires no complex technology. It can be extracted, refined, and manufactured directly. In this regard, an agreement has been reached with Canada to manufacture nuclear reactor components in Egypt. It has become clear that Egypt can manufacture the reactor and will not fall under the influence of world monopolies. We are now waiting for the political decision. The program is in the implementation stage, despite erroneous information exaggerating the costs. Let me stress here that the cost of the nuclear reactor is only \$1.3 billion, of which Egypt will contribute \$850 million." Dr. Hafiz Hajji added that any country that shifts to nuclear technology undergoes a cultural change in all fields. "Moreover, Egypt embarked on the High Dam battle, and it spawned huge companies and projects. Egypt should plunge into the battle of nuclear energy, so that it will possess high technology and be a specific source of assistance to the Arab nations in attaining this technology. I call on the Gulf states, in particular, to aid Egypt materially so that it can support Arab roles vis-a-vis this goal."

Dr. Hajji pointed out that there is no danger from the use of nuclear plants. Safety precautions currently being taken put them in the forefront of energy options in terms of safety and environmental protection. The proof of that is the fact that no nuclear accidents have occurred in developing countries that have built nuclear reactors, such as India, Pakistan, and Taiwan. Dr. Hajji rejects the West's statement that the Third World is incapable of utilizing this type of energy. His rejection is proven correct by the fact that there are 200 Egyptian workers operating and working in nuclear reactors in Canada. Egypt is the best place for them!

Musa on Nuclear Weapons

NC0612151991 Cairo AL-MUSAWWAR in Arabic
6 Dec 91 p 12, 13

[Interview with Foreign Minister 'Amr Musa by correspondent Sana' al-Sa'id in Cairo on 4 December]

[Excerpt] [passage omitted] [Al-Sa'id] What is your view of Israel's constant attempts to talk about the region's countries' preoccupation with armament and the danger surrounding Israel as a result of the Arab countries' purchase of nuclear reactors, and the concern Israel recently raised regarding Syria's purchase of a nuclear reactor from the PRC?

[Musa] This talk has often been repeated. The real danger lies in the existence of nuclear arms. There is an

inevitable need to control armament and remove weapons of mass destruction, foremost of which are nuclear arms. Israel must take part in this process so there will be no exception to the rule. Israel is like any other country of the region and, consequently, what applies to the Arab countries must apply to it. [passage omitted]

INDIA

Andhra Pradesh: Nuclear Plant Proposal Criticized

92WP0086B Secunderabad DECCAN CHRONICLE
in English 7 Nov 91 p 5

[Text] Miryalguda, 6 November—The announcement of the Chief Minister, Mr. N. Janardhan Reddy, that Pot-tichelma near the Nagarjunsagar Left Canal head regulator is the ideal place for setting up of the proposed nuclear power plant and that the government was considering the proposal came as a blow to the people in the district.

The proposal which is not a new one, had been more or less given up by the earlier V.P. Singh and Chandrasekhar Governments, following agitation by people from all walks of life against the setting up of the plant here.

The Chief Minister's statement hints at the positive attitude of the Central and State Governments towards setting up of the plant, while intellectuals and scientists are expressing doubts over its effects.

Nevertheless, there are many who welcome the plant as it would generate jobs and solve unemployment to a certain extent. They even argue that it is a step towards progress. The others however see it only as a mark of false prestige which would cost dearly in the form of spreading dangerous diseases such as cancer. Many nations which have noticed the ill-effects of nuclear power plants near densely populated areas are hesitating to set up such projects, they maintain.

Any minor mishap in the nuclear plant and the whole atmosphere would be affected by radiation that is harmful to the adjoining population and may claim a heavy toll of lives. In fact, even crops sown in the vicinity run the risk of carrying harmful radiation effects.

There is a possibility of letting out the coolants from the reactor containing nuclear dust into the Nagarjunsagar left canal or the Krishna river. In either of the cases, the polluted water might affect the fish and other living organisms causing diseases like cancer among those who consume them.

If the centre is set up in Nalgonda, people of the surrounding districts like Guntur, Krishna, Prakasam, Mahbubnagar, Hyderabad and Ranga Reddy districts

would be affected by it. It would be better for the government to set it up in a uninhabited area, a few persons feel.

Editorial Analyzes Pakistani Nuclear Scene

92WP0086A Secunderabad DECCAN CHRONICLE
in English 24 Oct 91 p 8

[Editorial: "Pakistan's Nuclear Obsession"]

[Text] The suspension by the U.S. of the military aid to Pakistan last year has not at all deterred the latter from going ahead with its nuclear weapons programme. Pakistan's nuclear scientist and father of the "Islamic bomb," Dr. A. Q. Khan has reportedly prided himself on the fact that his country is now a nuclear power. Addressing the Lahore Chamber of Commerce and Industry the other day, Dr. Khan said that Pakistan was now one of the new few countries in the world which possessed nuclear technology and know-how. His remark tends to confirm a Carnegie Endowments report that Pakistan can now probably deploy five to ten nuclear bombs for delivery by aircraft. Interestingly, the report was made public in September last year—about a month before the Bush administration suspended economic and military aid to Pakistan because the President had refused to certify to Congress that Pakistan did not possess nuclear weapons. A few months after the suspension, the chairman of the Pakistan Atomic Energy Commission, Mr. Munir Ahmed Khan, declared that his country would not slow down its nuclear programme and that it would not compromise on it at any cost. The same resolve was reflected in Dr. Khan's recent statement. If Pakistan has now become a nuclear power, posing a threat to peace in the Indian sub-continent, it is because of the American unconcern about the hectic unsafeguarded nuclear activity of Islamabad in the eighties. Inevitably, there is a strong demand in India for keeping the nuclear options open. There is much force in the plea that India's campaign for nuclear non-proliferation should not make it oblivious of the emerging nuclear threat in its neighbourhood. Pakistani leaders have over the years been saying that their country will sign the Nuclear Non-Proliferation Treaty (NPT) if India does so. But they cannot be unaware of the fact that India has to contend with another nuclear power—China.

Sometime ago, the Chinese Government reportedly deployed in Tibet nuclear missiles aimed at Indian targets. And with China there is an unresolved border row. It is the nuclear intentions of a country that count. Iraq, which is a signatory to the NPT, has reached an advanced stage in the manufacture of nuclear weapons. Right from the beginning of Pakistan's nuclear programme, there has been something intriguing about it. Islamabad is known to have changed its nuclear tune many times to subserve its interests. After Mrs. Benazir Bhutto became Prime Minister more than two years ago, the Pakistan Army kept her in the dark about what was really happening at the nuclear plants in the country. It

looks as though the elected government has no say in matters pertaining to nuclear weapons plan.

Pakistan's official position on its nuclear programme does not square with the statements made by its nuclear scientists. But reports emanating from international sources make one thing clear: that Pakistan is in possession of nuclear weapons. This perilous reality should not be blinked by the Bush administration, which, according to one report is now willing to accommodate Pakistan on the nuclear issue. The U.S. President has to decide this month whether he should issue the due certification under the Pressler Amendment that Pakistan's nuclear programme is a peaceful one. Such a certification would trigger nuclear arms race in the sub-continent. To avert that possibility, Washington would be well-advised to extend the suspension of military aid to Pakistan.

Research Reactor for Isotope Production Designed

*BK0612051691 Delhi All India Radio Network
in English 0435 GMT 6 Dec 91*

[Text] India has designed a general purpose research reactor which could be used by developing countries for isotope production and other applications of nuclear technology for peaceful purposes.

The prime minister, Mr. Narasimha Rao, gave this information in a written reply in the Rajya Sabha yesterday. These reactors when supplied will be strictly used under IAEA [International Atomic Energy Agency] safeguards.

IRAN

'Dastardly' FRG Statement on Nuclear Arms Cited

NC1512055991 Tehran ABRAR in Persian 5 Dec 91 p 2

[Unattributed commentary: "The Diplomacy of Truth"]

[Text] The German Government has attempted in its latest stance to project in a most dastardly manner to world opinion that Iran is eager to manufacture nuclear weapons.

The chief of the German intelligence bureau (Konrad Prezents) said at a press conference yesterday: "If Iran continues its current military activity it will attain the capability of making its own nuclear reactor by the year 2000."

Apart from this intentional narrowmindedness, the German Government has left the Bushehr nuclear power plant unfinished, which indicates the hidden motives and immature stance behind this action. If the Bonn government thinks that by such means it can conceal its intentions regarding Iran and by its obstructionist attitude on past commitments and by creating psychological

obstacles for the Islamic Republic of Iran it can lure it toward submitting to the new world order, it is strongly mistaken.

All the above utterances are extremely irresponsible and are being made when simultaneous to the press interview of the chief of the German intelligence bureau, the German Foreign Minister "Hans-Dietrich Genscher" generously bestows a human rights award to the Iranian foreign minister in gratitude for Iran's humanitarian efforts and its exerting of its influence for the release of the hostages in Lebanon!

We expect the German echelons to completely review their relations with Iran and to eliminate and amend all hidden contradictions in its diplomacy with Iran.

The German Government can only achieve a wholesome relationship with Iran when it follows a "diplomacy of truth" in its political conduct toward Iran, otherwise, the future prospect of ties with Iran will remain swathed in a mist of ambiguity.

Paper Views German Stance on Nuclear Capability

*NC0512121591 Paris AFP in English 1143 GMT
5 Dec 91*

[Text] Tehran, Dec 5 (AFP)—An Iranian daily close to hardliners on Thursday described as "irresponsible" a German statement that Iran was seeking to build nuclear weapons.

The Persian-language newspaper ABRAR said the German Government position was "pernicious" and asked German officials "to review their relations with Iran and correct the contradiction in their diplomacy towards Iran."

"Germany can only have normal relations with Iran if it pursues sincere diplomacy," ABRAR insisted.

German intelligence chief Konrad Porzner said in remarks published Wednesday that Iran would be able to build a nuclear bomb by the year 2000 if it keeps up its present military activities.

He told the daily DIE WELT that while there was no evidence Tehran was building nuclear weapons, it was sufficiently capable to begin manufacturing uranium or plutonium needed for such weapons.

Details on Bomb Production Activities

*92WP0067A Tel Aviv YEDI'OT AHARONOT
in Hebrew (Weekend Supplement) 15 Nov 91 pp 1-2, 19*

[Article by Ron Ben-Yishai]

[Text] In February 1987, Ali Hameni, then president of Iran, assembled members of Iran's Atomic Energy Commission at the Center for Nuclear Research in Tehran.

"We need atomic energy now," he told hundreds of scientists and engineers. "We need unflagging efforts from all of you, brothers."

At the same time, the advantage in the Iran-Iraq war was swinging to Iraq. "Al-Husayn" ground-to-ground missiles were already sowing death and destruction in Tehran, while Saddam Husayn was slaughtering thousands of Revolutionary Guards with poison gas. Though desperate and distraught like many of the ayatollahs around Khomeyni at that time, President Hameni tried to be careful and restrained. But the speech grew progressively more impassioned until he concluded with these blunt words: "Our faith lives forever in the shadow of an outside threat. The least we can do to meet this danger is to teach our enemy that we can protect ourselves. Therefore, every step you take here helps defend our homeland and the revolution. You must work hard and quickly."

These comments, quoted by the Iranian media from a senior Iranian figure, were the first official expression revealing that Iran is working on the bomb. Aside from some reporters and intelligence officials, however, very few have paid them attention. The International Atomic Energy Association (IAEA) also has ignored them.

A year after Hameni's speech, when Iranian scientists, with Pakistani assistance, were already engaged in intensive efforts to enrich uranium, Hans Blik, chairman of the IAEA, visited Iran. At the end of his stay, he announced his belief that Iran's nuclear program was designed for peaceful purposes.

That was not surprising. Blik's associates had visited Iraq on the eve of the Gulf War and, upon their return, officially announced that they had found nothing indicating a program for building atomic weapons. Like Iraq, Iran has signed the nuclear nonproliferation treaty and, like her, is leading the IAEA inspection team by the nose.

Indeed, what is astonishing about the Iranian nuclear weapons program is the resemblance to its Iraqi sister: the two programs were launched in the midseventies at the prompting of megalomaniacal dictators; both were interrupted and later revived; in both, vast sums of petrodollars were invested for covert acquisition of nuclear technology from all available sources in the international market.

The difference is in the rate of progress. When the Gulf War broke out, Iraq was ten to fifteen months away from the bomb. Iran has better scientists and no one is interfering with it at the moment, even though it has renewed its efforts to acquire nuclear weapons much later than Iraq did.

According to various experts, the Iranian nuclear weapons program today is at the infrastructure building stage that the Iraqi program reached about eight years ago. Opposition figures in Iran stubbornly insist that Iran already has in its possession enough high grade enriched uranium for one primitive atomic bomb. These

reports have not been verified and, so far as is known, Iran at this time lacks the infrastructure and necessary components to build a bomb.

"If Iran continues its efforts at the current pace, it could obtain an atomic bomb by the end of the decade. If the Chinese, the Pakistanis, and the Argentines continue to assist them, Iran will have a bomb of the type dropped on Hiroshima and Nagasaki, perhaps even a more advanced model, within seven or eight years," says Daniel Leshem, a senior researcher and science analyst at the Jaffe Center for Strategic Studies at Tel Aviv University.

Other experts share this opinion. Leshem, who has been following atomic developments in Iran for some time, is convinced that the efforts Iran is now making to improve its relations with the West are linked in no small degree to its drive to arm itself with nuclear weapons.

The Iranians are determined to avoid the mistakes made by Saddam Husayn, as in other endeavors, in his own nuclear weapons program. They do not want IAEA inspectors sniffing around in their country and will squirrel away documents and equipment in Kazwan, Isfahan, and Karge as the Iraqis are doing in the Tavita, Salaman, Fak, and Musul regions. For that reason, Rafsanjani is being careful not to provoke Bush and is even working hard to win release of the western hostages held in Lebanon.

The current president of Iran, Ali Akhbar Hashemi Rafsanjani, is undoubtedly the force behind Iran's nuclear weapons program. Dr. Riza Amrolahi, the chief of Iran's Atomic Energy Commission, is one of his deputies and directly subordinate to him. But the foundation for a Persian atomic bomb was laid in the 1970's by the very man whom Rafsanjani and his colleagues loathe and despise—the Shah, Riza Pahlavi.

Before Khomeyni took power, the Shah did more than a little in this arena. In 1975, he signed a contract with a subsidiary of the German Siemens corporation. According to the contract terms, the subsidiary, "Kraftwork Union," was to build two atomic power reactors, each supplying 1,300 megawatts of electricity, at Boshir on the coast of the Persian Gulf. The cost of the project was 5.5 billion German marks.

About a year after signing of the agreement, construction work at the two reactor sites was in full swing. Work proceeded without interference for three years until the Iran-Iraq war began in 1979. West Germany, faithful to its policy that prohibited involvement in regions of tension, instructed "Kraftwork Union" to cease its operations at Boshir. By that time, construction work at one of the reactors was 80 percent complete, while half of the other reactor had been built above its foundations, including the basic equipment needed for operation.

Immediately after signing the contract with the Germans, Iran ordered an additional reactor from France for producing 935 megawatts of electricity. The French

company, "Framatom," was to build this reactor near the city of Ahwaz in western Iran, not far from the border with Iraq.

At the same time, officials of the Shah signed a contract with a French company called "Yorodif" to supply atomic fuel for the reactors under construction. They also bought 20 percent of the shares of the firm, which was to supply Iran enriched low grade uranium.

This ambitious program required thousands of scientists, engineers, and technicians. Because the Shah wanted them to be Iranians, he sent hundreds of his countrymen for advanced study at the finest universities and atomic research institutes in Britain and the United States.

In sum, the Shah wanted to erect 20 nuclear reactors in Iran at a cost of \$30 billion.

But even that did not satisfy the Shah. The Iranian "King of Kings", just like Saddam Husayn, dreamed of seizing a position of leadership in the region and wanted to convert Iran into a regional power. In addition, he feared the rising military and scientific power of Iraq from the west and of Pakistan to the east. These two countries were then starting down the nuclear road; the Shah did not want to be left behind.

Accordingly, along with the ambitious, nearly megalomaniacal acquisition of the two giant reactors designed for generating electricity, the Shah directed a small group of Iranian scientists to begin construction of an independent infrastructure for developing nuclear weapons. A substantial part of this activity was conducted at a small nuclear research reactor built by an American company in Tehran. The Americans also supplied enriched high grade uranium for use as the reactor fuel.

When the Shah fell and Khomeyni seized power, the Americans stopped their deliveries of uranium. Nonetheless, some kilograms of that enriched high grade uranium remained in Iran. By some estimates, this quantity is enough for one atomic bomb.

The project was secret and only a few knew of its existence. When the Shah fell, however, and Khomeyni took power, it was disclosed by the many Iranian nuclear scientists who fled to the west. Some of them even knew enough to report at a later time that even during the Shah's reign, drawing on their close contacts with Iranian nuclear scientists in the American scientific community, they had managed to get hold of blueprints for producing a 20-kiloton atomic bomb equivalent to the one dropped on Hiroshima but of a more advanced type.

In 1978-79, the Shah's position began to crumble and the ayatollahs prepared to take the reigns of power. Khomeyni, who was then still in exile in France, had no love—to put it mildly—for the Shah's grandiose development projects. "The atom is the devil's handiwork," he told associates, and made clear that, on his return to Iran, he would put an end to the accelerated nuclear

development. Some of his inner circle who knew of the Shah's bomb program, however, thought otherwise.

In May 1979, at the peak of the turmoil following the Shah's fall, the Ayatollah Ahmed Behashti called on the Iranian nuclear scientist Dr. Fridon Fasharaqti, who was in charge of a small group that had been working to lay the foundation for the bomb. Dr. Fasharaqti had been directly subordinate to the head of state in the Shah's government and had prepared for him a plan for developing nuclear weapons. A copy of this proposal had somehow come into Behashti's possession.

When the two met, Dr. Fasharaqti later recalled, Behashti told him: "Your task is to build an atomic bomb for the Islamic Republican Party. Our civilization is in danger and, if we are to protect it, we must have the bomb."

"But," said the scientist, "that will be a very expensive project."

"No problem," Behashti replied. "The cost is bearable and it is our duty to begin the program without delay."

No fruit was born of this meeting. Some months after Khomeyni assumed power, the Ayatollah Behashti was murdered under unclear circumstances. With the fall of the Shah, Dr. Fasharaqti fled from Iran to the west along with hundreds of other Iranian scientists and students who decided not to return to their country.

The Iranian bomb project, like the rest of the elements of the Shah's atomic programs, was canceled by order of Khomeyni. France and Germany did not place excessive pressure on Iran to continue the projects. The United States pressed both governments not to cooperate with the fundamentalist Moslems who had seized power in Iran and taken the American diplomats hostage.

Six years passed before the ayatollah again began to show interest in a nuclear program. The first sign of that occurred on 6 November 1985. In the international edition of the Iranian newspaper "QIHAN," published that day, appeared an announcement calling on Iranian nuclear scientists abroad to return to Iran to participate in a scientific conference on nuclear power. The conference was scheduled to take place in Boshir in March 1986.

It is possible that the Iraqis also read the notice and it may be that they had other information that caused them to be concerned. That same year, they began aerial attacks on the "German" reactors in Boshir. The planes returned and bombed the sites five or six times. By 1987, they succeeded at last in dealing a crushing blow from the air that destroyed a large portion of the reactors which, so it seemed, had been frozen for the past eight years.

In the same attack, a German expert on the site was killed. German journalists looking into the circumstances of his death found that "Kraftwerk Union" had not entirely stopped construction work on the site. The

German corporation had entered a partnership with an Argentine Government firm for atomic development operating under the name "Ainwaff" and by that means continued its maintenance work and shipment of supplies to the site.

That was the first sign of an atomic connection between Iran and Argentina. Argentine newspapers and scientific monthlies in the United States later reported that, at about the same time, Argentina assumed the burden of restarting operations at the atomic research reactor in Tehran, which it had adapted to run on a fuel of low grade enriched uranium.

The critical component in an atomic bomb is the fission material. The explosive device of the bomb is relatively easy to develop and produce. Even if the apparatus is not the most advanced of its type, it will get the job done. The fission material, however, is difficult to manufacture in the quantity necessary, particularly when the atomic bombs are "primitive," which can be produced only with a relatively large quantity of plutonium 239 or, alternatively, high grade enriched uranium.

Plutonium is created in nuclear reactors from natural uranium bombarded with neutrons. Enriched uranium is produced, by contrast, by entirely different methods. The known techniques are mechanical separation by gas centrifuges, an electromagnetic process that uses a device called a calutron, and a method based on use of laser beams.

Whatever the system, enrichment begins with "ordinary" uranium ore. Therein lies the great importance of reports published in American scientific journals that Argentina has delivered 25 kilograms of low grade enriched uranium for the Iranian research reactor in Tehran. Production of a bomb requires about 20 kilograms of enriched uranium with a purity of 90 percent.

Iraq's bombardment of the reactors in Boshir revealed the involvement of another partner in the Iranian atom program. The expert whom the government of Iran invited to assess its damage was none other than Dr. Abd el-Kadr Khan, Pakistan's number one specialist in nuclear matters. El-Kadr Khan, who openly declared not long ago that his country has an atomic bomb, is regarded as the man who provided Pakistan its entry card into the exclusive club of nuclear weapon producers.

On completing his advanced studies at research institutes in Europe in the 1970's, he copied, in whole or in part, plans that later enabled him in Pakistan to build a vast and sophisticated system of centrifuges for enriching uranium. When the United States woke up and began to impose sanctions on Pakistan in an attempt to stop the program, it was already too late. At a research village in Kohota, Pakistan, Khan and his colleagues already held enough fission material to build a bomb. His appearance in Iran was an additional indication of the direction to which the ayatollah had set their faces in the realm of atomics.

That same year, 1987, was apparently the turning point in the Iranian project for producing nuclear weapons. The Iran-Iraq war had reached an impasse. The Iranians ceased advancing and suffered one setback after another at the hands of the Iraqis, who made extensive use of chemical weapons. Tehran began to understand that it was just a step away from defeat and the ayatollah feverishly searched for something that would equalize Iraq's unconventional weapons.

At Rafsanjani's instigation, Khomeyni lifted his opposition to "the devil's atom" and the bomb suddenly received a "stamp of approval" from the highest authority. It was then that Hameni delivered his famous address before the members of the Atomic Energy Commission and the efforts to develop nuclear weapons received a shot in the arm.

But Iran could not succeed on its own. It lacked facilities, scientists and technologists; everything had been destroyed or interrupted with the fall of the Shah. There was no point in turning to the West which, guided by the United States, viewed Iran as a pariah state. The Soviets, too, always cautious in nuclear matters, were not prepared to consider atomic collaboration with the ayatollah. Thus, there remained only the countries of the Third World. Three of them, China, Pakistan, and Argentina, were willing to sell their nuclear know-how out of a desperate need for foreign currency.

The British press reports that Iran signed a secret agreement in 1987 with Pakistan and Argentine companies for joint atomic work. Thirty-one Iranian scientists left for advanced study in Pakistan, where they received instruction from Pakistani and Argentine teams on various nuclear subjects, including enrichment of uranium. According to information that has not been confirmed, the Pakistanis the following year built an experimental centrifuge installation for enriching uranium in Kazwan, a city northwest of Tehran.

Also in 1987, China began aiding Iran in the erection of a center for nuclear research near Isfahan. After destruction of its petroleum installations by Iraq, however, Iran had insufficient foreign currency to finance the project in full. Thus, matters advanced only fitfully in the beginning.

Iran's nuclear weapons program received its great push forward with the end of the Iran-Iraq war in the summer of 1988. Countries that previously had been unwilling to consider trade with Iran saw the renewed oil production and suddenly showed an interest in business. The old partners, China, Pakistan, and Argentina, doubled their efforts with the realization that payment would soon be on its way.

In 1989 and then in 1990, in the shadow of the crisis brewing between the United States and Iraq, Iran's atom program reached full speed. Iran sued for international arbitration with the German company that was to have

built the reactors in Boshir and demanded that it finish the project or pay an astronomical sum in monetary compensation.

Meanwhile, Iran brought a similar claim against the French firms that had signed contracts with the Shah. The French Government, squirming under the Iranian demand for delivery of the enriched uranium ordered by the Shah, found itself in an especially delicate situation. The French knew very well the purpose to which that material was likely to be put and refused, but Iran tactfully reminded them that it is the owner of 20 percent of the company's shares.

The litigation with the Germans and the French recently ended in a financial compromise. Still, the Iranians are interested less in money than in plutonium and enriched uranium. Like the Iraqis, they are prepared to advance on a broad technological front so they can eventually find what they want.

The collapse of the Soviet regime also presented a golden opportunity for Rafsanjani's Iran to obtain what it seeks from a source that hitherto has been closed to them. Iran was not slow to realize the latent potential in the thousands of unemployed Soviet nuclear scientists offering their services to the West. Iran last year signed a protocol for joint economic action with the Soviet Union by which it was promised two Soviet nuclear reactors each to produce 440 megawatts of electricity.

Western intelligence experts are worried. The Soviet reactors could serve as the conduit through which Iran will receive from Russia the information, equipment, and components needed for its nuclear weapons program.

In the meantime, however, Iran has not neglected its old friends. The directors of its nuclear weapons program apparently feared that, if they attempted to build, on Iranian territory, large nuclear reactors capable of producing sizeable quantities of plutonium, undesirable international attention would continue. The same concerns applied to reactors whose operation requires large quantities of enriched uranium.

It appears, therefore, that they decided to follow a more sophisticated course, erection of a large number of small nuclear research reactors that each would supply 10 to 30 megawatts of electricity. Even a 10-megawatt reactor operating on natural uranium and heavy water can produce two and one half to three kilograms of plutonium in a year. Thus, in two or three years, such a reactor can provide enough plutonium for one bomb. If a number of such reactors are in operation in Iran, the time needed to produce significant quantities of plutonium will be cut.

And that is not all. By making some fairly simple changes in the structure of a small reactor, it is relatively easy to boost production, even doubling or tripling its output. These adjustments can be made after the reactor is

certified by the IAEA, and when output increases, so does the quantity of plutonium produced.

Iran therefore turned to a number of nuclear states in the Third World with requests to buy research reactors. According to information recently brought to light in the West, China, India, and possibly Argentina have been willing to comply.

Last year, China became the principal accessory to Iran's nuclear weapons program. Its scientists are now assisting in creation of the various components of the infrastructure necessary for that purpose. For example, China recently agreed to sell Iran a small calutron for use in enriching uranium. This calutron, of course, has civilian purposes, such as in the research reactor China agreed to supply Iran. But the Iraqi experience teaches that the moment Iran takes delivery of the calutron, it will have little trouble copying it and building many more, possibly even larger, calutrons.

The locations at which the nuclear research reactors will be built are not yet known, but it is believed that the Chinese research reactor (to supply at least 15 kilowatts of electricity) will be located close to Isfahan. The Indian reactor, if it is built, will be near Kazwan.

Meanwhile, two Iranian uranium mines are operating at full capacity. One is near the city of Yazad while the second is in the southern part of the country. Pakistani and North Korean experts are supervising the extraction and primary processing of the natural uranium derived from the ore.

North Korea is also involved in Iran's parallel drive to acquire the ability to manufacture long range ground-to-ground missiles with which to deliver the bomb. The Iranians are now attempting to convince the Chinese, too, to sell them the necessary information and equipment to develop long range ground-to-ground missiles capable of carrying a nuclear warhead thousands of kilometers.

When Iran does acquire the double capability to produce the bomb and mount it as a warhead on ground-to-ground missiles, Israel will be placed in the gravest state of real danger. Iran, after all, does not hide the fact that the main motivation fueling its drive is the ambition to become the holder of the Islamic bomb that will balance Israel's nuclear capability.

Iran intends to spend some \$50 billion in the next few years for military needs. Some estimates put those expenditures at \$5 to \$10 billion each year.

During the Madrid conference, leaders of the organizations opposing the political process gathered in Tehran. At that time, Iran's Vice President Muhajarani stated that "If Israel continues to maintain a nuclear arsenal, Muslims must work together to produce an atomic bomb

irrespective of attempts by the United Nations to prevent the proliferation of nuclear weapons. There must be equality between the nuclear capabilities of Israel and the Muslims."

There is another aspect of the link to Israel on this subject: Syria has been Iran's friend and ally for some time. It is not inconceivable that when Iran has nuclear missile capabilities, it will come to an agreement with Syria to transfer to Damascus its nuclear umbrella and the long sought "strategic parity" with Israel.

ISRAEL

Baraq on Nuclear, Chemical Buildup by Syria, Iraq

TA0612165691 Jerusalem Qol Yisra'el in Hebrew
1600 GMT 6 Dec 91

[Text] Chief of Staff Ehud Baraq said that only Saddam Husayn's removal from power would do away with the threat of Iraq assembling a nuclear bomb. He was speaking at the Commercial Club this afternoon in Tel Aviv. Lieutenant General Baraq stressed that it is important for Israel that the international community should not desist of its efforts to disarm Iraq of its nuclear weapons. He even suggested that the probe was being conducted at an overly slow pace and noted that the Iraqis have been taking advantage of this fact to conceal equipment and acquire additional know-how which it would be impossible to take away from them.

The chief of staff dwelt on Syria's military buildup, noting that Damascus has been developing dozens of Scud-C missiles and purchasing launchers from North Korea. Syria's chemical capability is larger than that of Iraq's, and it has also started showing interest in the nuclear sphere. The Syrians have acquired MiG-29's and have been receiving hundreds of T-72 tanks from Czechoslovakia, Baraq said.

[An earlier report at 1400 GMT on the chief of staff's lecture adds: "General Baraq believes that on the eve of the opening of talks in Washington, extremists in the territories might try to step up terror attacks, including the use of firearms, to sabotage the negotiations. The Army has taken numerous precautions to stem such a development."]

Chief of Staff Baraq on Iraqi Nuclear Threat

TA1312200591 Jerusalem Israel Television Network
in Hebrew 1810 GMT 6 Dec 91

[Address by Lieutenant General Ehud Baraq, the chief of staff, to the Commercial and Industrial Club in Tel Aviv on 6 December—recorded; broadcast in progress]

[Text] ...Two points. First, if we stand firm in guarding our defense interest; if we know how to clarify to ourselves what is essential, what is important, and what is desirable; if we are prepared to die for what is vital and

to struggle as long as necessary for what is important and to negotiate on what is desirable for us, especially if it is vital for the other side; if we know how to do all those things, then although there are risks in entering these negotiations they also contain significant chances.

The second point. I recalled earlier that one of the three aims driving the Americans and the international community is disarming Iraq of its nonconventional capability. From our viewpoint, the international community's consistency and determination in that effort is an important test case for three reasons. First, because of the very risk. The Iraqis still have, in our view, several hundred Scud missiles, thousands of chemical warheads for artillery, fuel-air bombs, etc. They were closer two years ago than anybody in the West ever assumed to installing a nuclear device. They were most likely in the advanced stages of planning a nuclear device, not only for the ignition of fissionable materials, and it is not inconceivable that, had the Gulf war not taken place, within 18 months or perhaps two years they would have had a nuclear bomb.

PAKISTAN

Article Urges 'Blast the Bomb'

92WP0085Y Karachi JANG in Urdu 7 Nov 91 p 3

[Article by Farhat Mehmood Khan: "Now or Never"]

[Excerpts] [passage omitted] The United States is now focusing its attention on nuclear programs in Pakistan, Iran, and Nigeria. It wants to unarm the Islamic countries so this one-third of the world population bows down to it, giving it the chance to take advantage of their resources. Thus, in the name of peace, it is trying to become the undisputed owner and leader of the world. We refer to this desire as the new world order. [passage omitted]

We are passing through the transient era after the Cold war. We should take advantage of this period and blast a nuclear bomb. If we lose this opportunity, then we will never be able to attain nuclear independence. American imperialism is tightening its hold on us gradually. May God forbid that the time comes when we are forced to close our nuclear program. In the past, we had stopped our nuclear program because of the demands of U.S. aid. At this time, U.S. aid and loans have been stopped, and we are not even getting aid for a pipeline.

Even if we suspend our program for the sake of U.S. aid, the United States will continue to impose new restrictions on us. For example, it may ask us to reduce the number of our armed forces, not to make progress in defense technology, not to make missiles, not to make tanks, not to cooperate with China, and so forth. This way, an endless series of demands will be made on us. As a result, we will not be independent any more, and we will not be free at all. [passage omitted]

Weapons given in charities and inadequate economic aid has never guaranteed a nation independence and self-sufficiency. This slogan of self-sufficiency that we have promoted should have been raised a long time ago. There will be many problems because of this delay. If the correct path is taken, then the nation will make sacrifices happily. Our nation should consult with its real friends—China, Iran, Turkey, and others—and blast the bomb. We should analyze the situation that would be caused by such a blast and also make defense preparations. During General Beg's time, the military paid special attention to defense and military industries. That is admirable. We should continue at full capacity now, since it is important for our self-sufficiency in the defense area. [passage omitted]

Government, China Sign Technological Accord

BK0912145991 Islamabad Radio Pakistan Network in Urdu 1400 GMT 9 Dec 91

[Text] Pakistan and China signed in Islamabad today their 11th agreement on bilateral cooperation in the scientific and technological fields. Under the agreement the two sides will conduct joint research and exchange study visits, information, documents, and data in various scientific and technological fields. Elahi Bux Soomro, the federal minister for science and technology; and Chen Zutao, the vice minister of China's State Science and Technology Commission, signed the documents on behalf of their respective countries.

Advances in Nuclear Field Proclaimed

92WP0085Z Lahore NAWA-I-WAQT in Urdu 6 Nov 91 p 4

[Editorial: "Assurance of Pakistan's Progress and Security"]

[Text] Dr. Ishfaq Ahmed, chairman of the Pakistan Atomic Energy Commission (PAEC), said that Pakistani scientists have succeeded in transforming the 5-megawatt [MW] research reactor situated in Nellore into a 10-MW reactor. The United States gave us the Nellore reactor as a gift under the "atoms for peace" program in 1965. This reactor was put into use in 1966 and used 10-percent enriched uranium for fuel. The reactor had a life span of 25 years. Pakistan was using it to prepare isotopes that were used for medical, agricultural, and other peaceful purposes. The United States stopped supplying fuel for this reactor in the 1970's. At that time, Pakistani scientists started to change the design of the reactor in order to attain self-sufficiency in this area. They have finally succeeded. Now this reactor uses

20-percent enriched uranium, and the responsibility for providing this fuel will be with Pakistan's trusted friend, China. The change in this design has increased the life of this reactor by 25 years, and the isotopes made here will still be used for peaceful purposes. Pakistani scientists and engineers are to be congratulated for changing the design of the Nellore reactor. This is a small beginning, and it shows the ability of Pakistan's talented engineers. Pakistan should be proud of its scientists. Progress in the nuclear area is a valid need of Pakistan, and the modern world does not only defend its borders using nuclear capabilities, but also uses such capabilities in the areas of health, agriculture, and engineering. Pakistan has succeeded in developing new seeds for agriculture as a result of this technology. The record-breaking cotton harvest is also a result of our nuclear program.

Unfortunately, Pakistan's nuclear program is a sore spot for the Hindu and Jewish lobbies, and Pakistan is being presented to the whole world as being obsessed with making the "Islamic bomb." Meanwhile, no objections are being made about India's nuclear program. India blasted an atomic bomb openly in 1974, and dozens of research facilities in India are busy preparing enriched uranium. According to a CIA report, this uranium is enough to make 25 atomic bombs. According to other sources, India can make 40 to 100 atomic bombs. India's ambitions are not hidden from anyone. The Indian Navy also has nuclear submarines. Keeping in view India's dangerous and warlike ambitions, Pakistan has the right to make plans for its defense. It is not possible for it to protect itself from India with its traditional military weapons. In order to ensure peace in this region and to stop India's "war fever," Pakistan has to take the route of nuclear deterrents. The United States and other anti-Islamic nations are targeting Pakistan in order to keep the Islamic world weak. Pakistan has made it clear that if India's nuclear program is kept under control, then Pakistan will accept every NPT [nonproliferation treaty] condition. Pakistan has introduced resolutions in the United Nations every year to keep the Indian Ocean free of nuclear weapons. In spite of these efforts, all blame is put on Pakistan. Pakistani Ambassador Aabida Hussein, stationed in the United States, has said that Pakistan cannot suspend its nuclear program unilaterally. It has every right to defend itself from India's dangerous ambitions, which is not possible without a nuclear deterrent. Pakistan also needs nuclear technology for its health, agricultural, industrial, and engineering areas. Pakistan cannot compromise this program to please the Hindu and Jewish lobbies. If the United States, China, the Soviet Union, Great Britain, France, Israel, and India have the right to have nuclear technology, so too does Pakistan. Pakistan cannot stay away from this "option."

Disintegration of Nuclear Power Viewed

LD1112234491 Moscow Central Television First Program Network in Russian 1900 GMT 11 Dec 91

[Commentary by A. Gerasimov; introduced by correspondent Irina Mishina; from the "TV Inform" newscast]

[Text] [Mishina] For many years the downfall of the Soviet Union was an American dream. However, Robert Gates, the new director of the CIA, said on 10 December that this dream is turning into a nightmare. The biggest cause for concern for the Western strategists is the control of the 30,000 units of the Soviet nuclear arsenal.

[Gerasimov] The text of the agreement on the creation of the commonwealth of independent Slav republics claims that the member-states of the commonwealth will preserve and maintain a common military-strategic space under a unified command including unified control over nuclear weapons. It does not clarify specifically by whom and how the nuclear button can be pressed.

This is the first time in human history that the disintegration of a nuclear power has occurred, and quite understandably the world's inhabitants are concerned over the question of guarantees of their strategic safety. Until 8 December the whole world was aware that only Mikhail Gorbachev could order the launching of the ICBMs located in Russia, Kazakhstan, Belarus, and the Ukraine.

Then on 9 December at a news conference on the results of the Belovezhskaya Pushcha meeting, Ukrainian President Leonid Kravchuk stated that another system had been created for the launching of missiles and that three buttons, each under the control of the leaders of the Slav republics, needed to be pressed simultaneously. There was no mention of the fourth Kazakh button.

It is for military strategists and politicians to judge whether the security of the peoples of the former Soviet Union is increasing and whether world nuclear confrontation is decreasing, but those who have to eliminate the missiles are becoming dismayed. Refuting what the Ukrainian president had said, Gen. [General] Maksimov, the guardian of the missile potential, stated that both prior to and following Belovezhskaya Pushcha only the USSR president is in charge of the nuclear console. This was confirmed by Russian President Boris Yeltsin in a telephone conversation with U.S. President George Bush.

Let us add that alongside the button with Gorbachev are the Defense Council and Defense Ministry of the Soviet Union, a state that to all intents and purposes no longer exists. In short it is a fine muddle in the best traditions of the USSR.

The out-of-favor Chief of the General Staff Lobov, who was recently sacked by the country's president, has brought further refinement to the situation. Today he expressed perplexity over his retirement and at the same

time stressed that his credo was the impossibility of the constantly changing political situation having an influence on the Armed Forces.

At present events are developing in such an unexpected way that it is virtually impossible to predict the future, and certainly it is essential to have precise guarantees from all leaders involved with nuclear weapons so that we do not feel like hostages of the button.

[Mishina] And so, up to the present moment Mikhail Gorbachev is the commander-in-chief of the Soviet nuclear arsenal. For the time being the politicians are waiting and assessing the situation. Meanwhile it has been learned that the United States, the EC and NATO have sent their representatives to the Ukraine to clarify the nuclear weapons situation on the spot.

Maksimov Asserts Central Claim to Missiles

PM1012234191 Moscow IZVESTIYA in Russian 11 Dec 91 Union Edition p 7

[Interview with Army General Yu. Maksimov, commander in chief of Strategic Deterrence Forces by V. Litovkin; place and date not given: "Army General Yu. Maksimov: 'Our Nuclear Weapons Are Under USSR Presidential Control'"—first paragraph is introduction]

[Text] IZVESTIYA has already announced (No. 275) that a new branch of the Armed Forces—the Strategic Deterrence Forces—has been set up in our country by USSR presidential decree. Army General Yu. Maksimov has been appointed its commander in chief. Our military correspondent talks to him.

[Litovkin] Yuriy Pavlovich, following the agreements reached in the Belovezhskaya Forest, who is the proprietor of the nuclear weapons, you or the leaders of the three independent republics?

[Maksimov] Both before and after the Belovezhskaya Forest, to use your expression, the USSR president and the State Council are their proprietors.... And we are responsible for the high degree of the Strategic Deterrence Forces' combat readiness. As for tactical nuclear weapons, they too will remain under USSR presidential control although they are under the jurisdiction of the Ground Forces, aviation, the fleet, and the Air Defense Forces...

[Litovkin] Why are the Strategic Deterrence Forces necessary? What will they constitute?

[Maksimov] Their aim is to ensure military-strategic stability and strategic parity. The new branch of the Armed Forces has been formed based on the Strategic Rocket Forces and ballistic missile early-warning, space surveillance, and missile-space defense systems, as well as the space hardware chief's directorate. Forces and systems from the Air Defense Forces will also be included.

Air and sea strategic nuclear forces will also be under their operational jurisdiction. But the final composition and organizational-staff structure of the Strategic Deterrence Forces are still to be clarified....

[Litovkin] What will the creation of the Strategic Deterrence Forces bring?

[Maksimov] Concentrating all strategic nuclear forces in one set of hands will help unite their systems of command and control and combat use, formulate unified technical policy and a system of staffing and cadre training, preclude unnecessary duplication, and thus, save a considerable amount of money.

[Litovkin] Another point to clarify: When listing the components of the Strategic Deterrence Forces, you said nothing about arsenals, nuclear weapons storage bases, plants where missiles are assembled and testing ranges...

[Maksimov] Without doubt, everything that is part of the Strategic Missile Forces, as well as the other defensive systems that I have cited, will be part of the Strategic Deterrence Forces.

[Litovkin] How does the creation of a new branch of the Armed Forces fit in with the Treaty on Strategic Offensive Arms Reduction and Limitation and G. Bush's and M. Gorbachev's disarmament initiatives? What is your opinion of them from the military viewpoint?

[Maksimov] I think that the formation of our troops is fully in line with the Strategic Offensive Arms Treaty. I have already said that the intention is to cut appropriations, parallel, structures that duplicate one another, and, thus, arms—all this, I repeat, comes within the treaty that has been signed and is designed to fit in with the stages for its implementation.

As for a military-strategic assessment of the two presidents' initiatives, I can say one thing about them: The drastic reduction in nuclear confrontation is in itself a positive thing. We are, for instance, taking off combat alert 503 intercontinental ballistic missiles. That represents 1,094 warheads. We are resolving a whole series of other issues. We are withdrawing from our force composition the RS-10, RS-12, and RS-16 ICBM's currently deployed. The West classifies them as the SS-11, SS-13, and SS-17.

Our bombers will not be on combat alert duty with nuclear weapons on board. U.S. strategic bombers are also being taken off combat alert and "Minutemen-2 missiles will no longer be on combat alert...." I think that all this will strengthen military-strategic stability in the world.

[Litovkin] Some experts reckon that the U.S. side's individual initiatives are putting us in a disadvantageous position. They intend to reduce their oldest missiles, while saying nothing about sea-launched nuclear forces and trying at the same time to deprive us of very

powerful modern weapons like mobile intercontinental missiles and remove their mobility capability. How do you view these suggestions?

[Maksimov] Our talks with the Americans are always made difficult because the structures of our strategic nuclear forces are different. It is very hard for both sides to find a balance of interests. What is more, the various proposals and initiatives do not yet represent a final solution; they have given no one the edge. But they suit us as a basis for negotiations. Because negotiations always represent a quest for mutually acceptable compromises.

The Strategic Offensive Arms Treaty does not apply to our mobile "off-road" complexes. And the suggestion that Soviet mobile railroad complexes will operate in permanent basing areas is our initiative. We think that, in view of the general strategic stability in the world and the situation today, we can take that step without damaging the country's security.

Naturally, this is not a definitive decision. If the international situation improves, we will agree to new initiatives.

[Litovkin] Will they require corresponding steps from the United States?

[Maksimov] I think that both sides have already taken corresponding steps, apart from the fact that our decision to cut warheads from 6,000 to 5,000 goes further than the U.S. proposals. But that is their question: What is to be done in that case?

[Litovkin] But the Strategic Offensive Arms Treaty has still not been ratified either by us or by the United States.

[Maksimov] It is now in the process of being prepared for ratification by the country's Supreme Soviet and the Congress.

[Litovkin] But won't the collapse of the USSR and the formation in its place of four nuclear powers, in particular such a powerful independent state as the Ukraine, on whose territory the Strategic Rocket Forces are situated, prevent its ratification?

[Maksimov] I don't think that there should be any particular difficulties. The sizeable reduction in strategic arms for which the treaty makes provision is in the interests of both the United States and the USSR, and the whole world.

In my view, the fears that four nuclear powers will emerge are unfounded. There is only one nuclear state—the Soviet Union as a whole or the state system that will be its rightful successor. And as you know—this was also said at the Fifth Congress of People's Deputies and confirmed at a session of the State Council—the strategic nuclear forces will be centralized and under unified control. That is also the case today.

The republics' sovereignty and the referendum on Ukrainian independence, along with the agreement concluded near Brest, do not destroy but preserve this system. Leonid Kravchuk has frequently said that they do not lay claim to strategic weapons. Transferring these weapons to any republic is politically, economically, and legally—much less technically—impossible.

A breach of the Nuclear Nonproliferation Treaty may cause serious international complications. And they serve no purpose for us or the Ukraine. What is more, control of the strategic missile complexes is strictly centralized and it is virtually impossible to take "command" of them from a republic's territory.

The right of every republic to declare itself a nuclear-free zone and strive to secure that status is another matter. We fully respect and understand that right. But realistic deadlines and the procedure for bringing that decision into effect must be decided and coordinated.

[Litovkin] Your troops' auxiliary complexes are today located on the territory of many republics, including the Baltic states. How are your relations developing?

[Maksimov] We have no particular conflicts. All questions that arise are settled in a businesslike way, on the basis of mutual understanding. But legal status for our installations must undoubtedly be formulated and mutually acceptable agreements must be concluded, as is the case in the civilized world. I hope that this will occur in the near future.

[Litovkin] The Missile Troops are liable to cuts under the Strategic Offensive Arms Treaty. Will you coordinate the dates and procedure for this work with the sovereign states where your installations are located?

[Maksimov] The cuts should take place within seven years after the treaty is ratified. Up to one-third of the missiles and almost half of the warheads will be destroyed. The dates and procedure for the work have been envisaged so as not to damage the security of either side. Needless to say, the republics will be informed about this.

Control of Nuclear Arms 'Not Clear' to West

PM1312104591 Moscow IZVESTIYA in Russian
12 Dec 91 Union Edition p 4

[G. Deynichenko article: "It Is Not Clear to the World Which of Us Has His Finger on the Nuclear Button"]

[Text] The results of the meeting of the leaders of Russia, the Ukraine, and Belarus in the Belovezhskaya Forest have probably only increased confusion in the West's main political centers. The spare wording of the foreign policy sections of the documents signed by the three leaders is too general to shed light on the future modus operandi of the Commonwealth as a whole and of each of its three members in the international arena.

The three leaders' decision "to preserve the united command of the common military-strategic space and unified control over nuclear weapons" is designed to be an important reassuring element of the "Belovezhskaya" documents. But our Western partners are not satisfied with this wording. They still are not clear on the question—one, it has to be said, that is most important to the peoples' security—of just what, nonetheless, is the fate of one of the largest nuclear arsenals on the planet.

Western capitals have seen, above all, a certain discrepancy in the participants' approaches to the problem of nuclear control. Whereas Yeltsin assured Bush that nuclear weapons will remain in one pair of hands, the Ukrainian president, on returning to Kiev after the meeting, spoke of a control system with three nuclear buttons, which are earmarked for the three leaders and must, in case of need, be pressed simultaneously. It is quite likely that there is no discrepancy here and that such trilateral control over nuclear weapons is called unified. But any ambiguity must be ruled out in such questions.

Meanwhile, the published documents do not reveal the three leaders' cooperation mechanism in the event—God forbid—of nuclear danger: whether this cooperation will be conducted through the united command, or whether this mechanism will insist on a safety device until the leaders themselves adopt a different decision.

But even if you remove this question, a fourth nuclear republic remains—Kazakhstan with its arsenal of nuclear systems, which, although small by the yardsticks of the former Soviet Union, is nonetheless weighty. How is it possible to speak of centralized control if Kazakhstan is at present outside the newly proclaimed Commonwealth? Finally, President Gorbachev, who nominally, according to the constitution, is commander in chief of the Soviet Armed Forces, is not giving up the nuclear button.

The agreement on the Commonwealth proclaims its members' desire to eliminate nuclear weapons and says that the sides "will respect each other's desire to achieve the status of a nuclear-free zone and a neutral state." These are noble aims which, understandably, are addressed to the future. But political experts believe—maybe without sufficient grounds—that it will not be that easy for the three Commonwealth member states to give up their nuclear status. Both because of prestige considerations and because of a secret wish to try to secure agreements advantageous to themselves because they will have the force of a nuclear wish. London's DAILY TELEGRAPH offers quite a sophisticated prognosis, yet one that is not devoid of probability. Citing the opinion of Western analysts, it maintains that "Yeltsin will hardly wish to destroy his strategic arsenal, mindful that China, which possesses nuclear weapons, is next door." Three other republics—the Ukraine, Kazakhstan, and Belarus—"also will not wish to disarm completely, fearing Yeltsin's monopoly in the nuclear arms sphere."

It is worth adding that it is a matter not only of this: Kazakhstan has quite a long border with China.

I am sure that a certain part of all the suspicions, perplexities, and doubts being voiced in the West in connection with the destinies of the Soviet nuclear arsenals is simply farfetched. "There are no grounds for believing that Russia or the Ukraine are unreliable states," Helene Carrere d'Encausse, Sovietologist and member of the French Academy, firmly declares. There really are no grounds. And the presumption of innocence must exist in international law. But this does not free state leaders from the obligation to formulate the foreign policy goals and tasks of the newborn Commonwealth precisely and scrupulously, even if the birth caught them unawares.

Of course, with the passage of time, unless fickle fate intervenes in the further existence of the union of three states, their foreign policy declarations will become clear and orderly. Maybe it would make sense to wait before drawing conclusions, only nuclear arms cannot wait. What is needed to keep them in check is clear political power, which would close up the whole military chain from above. Such a structure cannot be seen in the "Belovezhskaya" documents.

Primakov Insists Nuclear Weapons 'Secure'

*LD1212204391 Moscow TASS in English 2019 GMT
12 Dec 91*

[By TASS correspondent Lori Cidylo]

[Text] Moscow December 12 TASS—Yevgeniy Primakov, director of Soviet Central Intelligence, insisted at a luncheon for foreign correspondents in Moscow today that the system of control over the Soviet nuclear arsenal is secure and poses no threat to the world. Primakov said the mechanisms in place "absolutely guarantee" that nuclear weapons will not fall into the wrong hands. He emphasised the need to maintain a common military, economic, and central intelligence network among the republics of the former Soviet Union.

"We have to preserve in some form, I want to emphasise, in some form, a common economic space and military strategic structure on the territory of the former Soviet Union...a common military structure is especially important for us as far as nuclear weapons are concerned and especially important for the world," Primakov said.

When asked about nuclear weapons in Kazakhstan, Primakov replied, "I think that they should be, and I am sure that they will be, under one command. When some people say that the presidents of various republics should all have access to the 'three buttons,' from the point of view of the country's defense, this is nonsense. There is no cause for worry," but when pressed for details about who is actually controlling the vast Soviet nuclear arsenal, Primakov was evasive. "Our experts met recently with American experts to discuss the problem, and they all agreed that our system is not less but more

secure than anyone else's," he said, adding "this mechanism will remain in place, but who, concretely, is in charge of this, even if I knew it, I wouldn't tell you." As the Soviet Union unravels, no one can be certain that the old systems of control are still in place, or, if they are, how long they will remain so. The Bush administration is concerned that controls may break down completely amid the chaos gripping the country. Director of Central Intelligence, Robert M. Gates, said Tuesday [10 December], "we face a period of uncertainty as Russia and the other republics sort out possession of the weapons and establish new structures and procedures for controlling and operating them." Gates told the House Armed Services Committee, "the situation is dangerously unstable. The economy is in a free fall with no prospects for reversal in sight." Gates also spoke before Congress on Wednesday predicting severe social upheaval in the disintegrating Soviet Union, saying the country has not faced such turmoil since 1917, when Lenin and his Bolshevik Party, later to become the Communist Party, first rose to power. Robert Strauss, the U.S. ambassador to Moscow, warned that in the current climate, a charismatic incendiary could easily gain power, and stoke the flames of nationalist sentiment, creating a situation which could escalate into civil war. CIA analysts worry that with no clear chain of command, a disgruntled army, suffering from shortages of food, fuel, and, in many cases, housing, could pose a threat to the fragile new commonwealth. Speaking of the fledgling leaders of the republics, Gates said, "We are deeply concerned that the enormous economic and social challenges...may overwhelm them."

Although Primakov predicted that "serious social tensions" could grip the Soviet Union by the beginning of next year due to the economic crisis, and particularly if reforms fail, he discounted the possibility of a second coup d'etat possibly by hard-line military forces, predicted by Soviet President, Mikhail Gorbachev, and St. Petersburg Mayor, Anatoliy Sobchak. Tanks will not appear in the streets of Moscow again as they did last August, he said.

Primakov also said the commonwealth formed by Russia, Belarus, and Ukraine, which has already been ratified by the parliaments of those republics, has "positive implications," for the future, although he emphasized that a centralized intelligence network will continue to "serve the interests of society," in whatever form it emerges.

In an effort to stabilize the Soviet economic crisis, President Bush signed a law promoting trade relations with the Soviets on Tuesday.

Western Attitude to Nuclear Arms Examined

*PM1612131591 Moscow IZVESTIYA in Russian
13 Dec 91 Union Edition pp 1, 5*

[V. Mikheyev feature under the general heading: "Our Disorder, Their Headache. The West Believes the Idea of a Commonwealth Will Help Us Get Out of the Impasse"]

[Excerpt] [passage omitted] **Whose Finger Is on the Nuclear Button?**

Statements by Soviet leaders in the past few days have not fully clarified this extremely important question. Russian Foreign Minister A. Kozyrev, whose words were interpreted to mean that although M. Gorbachev is exercising supreme control of the nuclear arsenal during the transitional period, he is nevertheless already sharing it with B. Yeltsin, was joined by Ukrainian President L. Kravchuk who believes in the likelihood of the creation of three "nuclear buttons." Russian First Vice Premier G. Burbulis's answers at a news conference in Moscow as to who is commander in chief ("We will resolve this question in the next few days") were also disquieting.

We must not forget that the fate of almost 30,000 Soviet nuclear warheads is our neighbors' paramount worry. It is not out of the question, in their opinion, that tactical nuclear weapons will fall into the hands of nationalistically inclined leaders or will be secretly sold to "Third World" states which are at times noted for their even greater unpredictability.

This will be the subject of discussion at a meeting between French President F. Mitterrand and G. Burbulis on 12 December. B. Yeltsin's envoy, who has arrived in France on a one-day visit, will also meet National Assembly Chairman L. Fabius, Minister-Delegate for European Affairs E. Guigou, and the country's former President V. Giscard d'Estaing. Local observers perceive this visit as Russia's desire to calm public opinion, showing that the nuclear button is now in reliable hands, our Paris correspondent Yuriy Kovalenko reports.

In this connection, news agencies have been extensively quoting the words of P. Deynekin, commander in chief of the Soviet Air Force, who said that "a madman on his own cannot take control of these weapons." Meanwhile, in Brussels, NATO leaders are examining the idea of giving assistance to the East European countries in two spheres—the conversion of the military industry and the introduction of civilian control over the military.

Defense Minister on Nuclear Arms Control

LD1312225191 Moscow Central Television First Program Network in Russian 1900 GMT 13 Dec 91

["TV Inform" interview with Colonel General of the Air Force K.P. Morozov, Ukrainian defense minister, by correspondent L. Ilchenko, date and place not given—recorded; introductory paragraph read by program presenter Sergey Medvedev]

[Excerpts] Mikhail Gorbachev had telephone conversations with Boris Yeltsin and Leonid Kravchuk today. The latter took place after the Ukraine president had declared himself commander in chief of the republic's armed forces. [passage omitted]

Now, to the position of Ukraine. [passage omitted]

[Ilchenko] Can we say now that President Leonid Kravchuk will have his hand on the control panel of the strategic weapons in the Ukraine?

[Morozov] The united strategic forces that will belong jointly to the countries of the Commonwealth will be implemented by a body which will be set up according to a decision of the presidents of these states, while the presidents themselves will be taking part in consultations and in conferences.

[Ilchenko] Konstatin Petrovich, can all the countries and peoples be sure that a nuclear missile will never be launched from Ukrainian territory?

[Morozov] Absolutely.

Bush-Gorbachev Discussed Nuclear Arms

LD1412012191 Moscow TASS International Service in Russian 0048 GMT 14 Dec 91

[By TASS correspondent Igor Barsukov]

[Text] Washington, 14 Dec (TASS)—The White House has announced that on 13 December President George Bush, at his own initiative, held a telephone conversation with USSR President Mikhail Gorbachev. During their nearly 30-minute talk, they discussed the formation of the Commonwealth of Independent States, the Soviet economy, and how to ensure the safety of nuclear weapons. According to the White House announcement, President Gorbachev assured President Bush that Soviet nuclear weapons are under reliable control. The American leader stressed that the United States supports the democratic reforms taking place in the republics, and gave an assurance that the U.S. Administration is willing to provide humanitarian and technical aid.

China Will Not Help Develop DPRK Arms

SK1212083491 Moscow Radio Moscow in Korean 0900 GMT 9 Dec 91

[Commentary by station commentator Oleg Alekseyev]

[Text] Tian Jiyun, vice premier of the PRC State Council, in a meeting with Watanabe, Japanese foreign minister, declared that China will not cooperate with North Korea in developing nuclear weapons.

In this connection, station commentator (Oleg Alekseyev), writes the following: The declaration of Tian Jiyun, vice premier of the PRC State Council, is another evidence showing China's principled position on the issue concerning the nonproliferation of nuclear weapons.

The international community has attached particularly important meaning to the issue of nuclear nonproliferation. What is a problem is that the possibility of nuclear weapons proliferation in Asia and the rest of the world increases considerably.

In addition, Vice Premier Tian Jiyun declared that China plans to sign the Non-Nuclear Proliferation Treaty in the near future. It goes without saying that such a measure will be an important event. I am convinced that such a measure will have a positive influence on the Asian situation, which is faced with the acute issue of the uncontrolled proliferation of nuclear weapons. Precisely proceeding from such a standpoint, the North Korean issue was discussed in meetings between Tian Jiyun, Chinese vice premier, and the Japanese leaders.

I will briefly talk about the essence of the issue. The DPRK signed the Non-Nuclear Proliferation Treaty in 1985. The treaty stipulates that countries, which do not possess nuclear weapons and sign the treaty, in case that they have atomic-energy facilities within their lands, should open their doors for an international inspection.

Regrettably, Pyongyang has still avoided such a demand. This concerns many countries, including Japan. Therefore, the concern arises that the DPRK Government is promoting a research project to develop nuclear weapons of its own. It goes without saying that this situation will never contribute to easing the military and political tension on the Korean peninsula and to developing international relations in all districts of the Far East.

And then, what is the prospect for the issue? I expect that the issue which concerns the world community will be resolved in the near future. A week ago, the DPRK Foreign Ministry issued a statement saying that, if the withdrawal of U.S. nuclear weapons from South Korea begins, it will agree to accept inspection of its nuclear facilities. There is a condition in the statement. That is, inspection of North Korea should be conducted simultaneously with the inspection of South Korea.

Seoul announced that the withdrawal of U.S. nuclear weapons had already begun and that the withdrawal will be completed within a short time. After U.S. nuclear weapons are completely eliminated from South Korea, there will be no problem in connection with the international inspection of Seoul nuclear facilities. At any rate, observers interpreted the statement issued by ROK Defense Minister Yi Chong-ku in mid-November in this way.

Considering all facts, questions lie in Pyongyang. The positive resolution of an inspection of nuclear facilities in North Korea will open up the possibility of realizing the proposal for turning the Korean peninsula into a nuclear-free zone, which the DPRK put forward a few years ago. Needless to say, China can cooperate to realize such a proposal.

Commentary on China, Nonproliferation Treaty

*OW0612045991 Moscow Radio Moscow in Mandarin
1000 GMT 5 Dec 91*

[Alekseyev commentary from the "Asian Affairs" program—read by announcer]

[Text] PRC Vice Premier Tian Jiyun said while meeting with Japanese Prime Minister Miyazawa in Tokyo: China wants to accede to the Nuclear Nonproliferation Treaty soon. A commentary by station commentator Alekseyev on this subject follows:

I would like to call your attention to the fact that the Nuclear Nonproliferation Treaty has been signed for 23 years and that 118 countries have so far acceded to the treaty. Three large nuclear powers—the Soviet Union, the United States, and Britain—guarantee the implementation of the nuclear nonproliferation system as stipulated in the treaty.

In 1968, four years after China possessed nuclear weapons, the Nuclear Nonproliferation Treaty was signed. However, China did not sign the treaty at that time, nor has it since. At this time, we do not need to delve into why China has taken such a stand.

What I like to point out is this: China's foreign policy at that time was a radical one resulting from the Cultural Revolution. Years have passed since then. For years China has pursued a different policy internationally, and it has firmly stood for extensive international cooperation in reducing the nuclear threat.

I would also like to point out that Chinese leaders have stressed on more than one occasion that China has never sold nuclear weapons to any other country, nor has it sold technology for manufacturing such weapons, nor will it do so in the future. Under these circumstances, it is completely logical for China to accede to the Nuclear Nonproliferation Treaty. I think this step is all the more important under present conditions because the prevention of nuclear proliferation has once again become the focus of world attention. The reason for this is obvious: The nuclear technology originally monopolized by the great powers is now also possessed by other countries, including some Asian countries. This problem has become rather acute in Asia. The military and political situation is unstable in some areas where there is no control over nuclear weapons and where there is a greater danger of nuclear proliferation. This is also an aspect that cannot be ignored. Therefore, China's acceding to the Nuclear Nonproliferation Treaty will undoubtedly be of positive significance.

As a large, influential country enjoying high prestige in the world, China can effectively promote the implementation of the Nuclear Nonproliferation Treaty in Asia. Besides, China's acceding to the treaty will undoubtedly have a positive influence on its relations with Western countries, including the United States. Incidentally, during his recent visit to Beijing, one of the main subjects of U.S. Secretary of State Baker's talks with Chinese leaders was China's acceding to the Nuclear Nonproliferation Treaty.

RSFSR Chairman on Korean Nuclear Issue

*PM1512164591 Moscow ROSSIYSKAYA GAZETA
in Russian 13 Dec 91 First Edition p 1*

[Unattributed report: "Visit Over"]

[Text] RSFSR Supreme Soviet Chairman Ruslan Khasbulatov has returned to Moscow after completing an official visit to South Korea. Replying to a question from journalists on the results of his visit to South Korea, Ruslan Khasbulatov noted that at the present time Russia is seriously concerned by the process of the possible expansion of the nuclear presence, including on the territory of the Korean peninsula. All this was reflected in the meetings with leaders of the South Korean parliament. During the conversations questions of bilateral cooperation between the Russian and South Korean parliaments were extensively discussed.

Iraqi Uranium Moved Through Moscow Airport

*924P0042A Moscow IZVESTIYA in Russian 3 Dec 91
Union Edition p 8*

[Article by V. Belykh: "Container With Nuclear Fuel From Iraq Brought Through Moscow's Sheremetyevo-2 Airport Without Fanfare"]

[Text] Almost no one remembered that this AN-12 aircraft flew into Sheremetyevo-2 Airport on the night of 18 November. What distinguished it from the general traffic perhaps was the unusual "United Nations flight No. UN-531." Even during the inspection, one of the customs officials refused point-blank to enter the aircraft. So, the formalities did not take up a lot of time. And the group in civilian clothes that met it, after taking the cargo, departed with it for the city of Elektrostal, not far from Moscow....

That is how the operation ended in the shipment from Iraq of 11 containers with fresh "nuclear" fuel. More than 12 kilograms of enriched Uranium-235 were transported on two flights on 15 and 18 November through the country's main international airport from the Middle East.

When, hoping to get comments, I called up Sergey Adamchik, chairman of Gospromatomnadzor [State Committee for Industrial Nuclear Supervision] of the Russian Soviet Federated Socialist Republic, he was quite surprised, and he repeated several times: He was unable even to imagine that someone would take the wild idea into his head to land an aircraft with such unusual cargo at a civilian airport....

It is probably possible to understand this lack of information on the part of the chairman of the Russian committee, who is called on to protect us from all kinds of radiation and nuclear surprises... His department was created quite recently, and it has not yet earnestly gotten down to work. But, as it turned out, his "Union"

colleague Vadim Malyshev, chairman of the now abolished USSR Gospromatomnadzor, was also completely in the dark.

Was this what happened, or not? It did not take long to figure out. The uranium transport operation was arranged by the USSR Ministry of Atomic Power and Industry, which in recent years has presented us with more than one terrible surprise.

But everything began rather nobly. After the defeat of Iraq, when the UN Security Council speculated that Iraq was engaged in creating a nuclear weapon, it resolved to deprive the defeated country of all material necessary for this purpose.

I succeeded in finding a participant in these events, Petr Lavrenyuk, deputy general director of the Tvel [fuel element] concern of the Ministry of Atomic Power and Industry.

"Approximately 40 kilometers from Baghdad, in a nuclear center near the town of Tuvayt [as transliterated], IAEA [International Atomic Energy Agency] specialists found a Soviet RT-2m reactor, 'fresher,' and spent nuclear fuel for it," he recounts. "As it turned out, it was basically produced here in our country, and it was transferred under contract to Iraq in 1983-85. The uranium was based on aluminum alloys, and, speaking in our language, 68 products were 80-percent enriched, and 10 were 36-percent enriched. IAEA—the International Atomic Energy Agency—offered to pay us to take this uranium, reprocess it in our country, deplete it, and return it to the disposition of the agency. AN-12 transport aircraft from the Scientific Research Institute of Civil Aviation was found with a crew of test pilots. Eleven special heavy-duty containers were delivered from the Union to Iraq. Inasmuch as the operation was international, the flight was given a United Nations Organization number, UN-531."

So what kind of cargo did they intend to carry? Overall, the most dangerous was the "spent" nuclear fuel. This is what gives off awful radiation. The yet unused "fresh" fuel is much "stabler" (and it is this that UN-531 conveyed, representatives of the Ministry of Atomic Power and Industry assert). In its Tvel packaging, it gives off a radiation background that is not much higher than the natural background.

We asked Vladimir Fedin, first deputy chief of the Main Administration of the USSR Gospromatomenergo-nadzor [State Committee for Industrial Nuclear Energy Supervision], for a more detailed evaluation of the "Iraq cargo." He explained that Uranium-235 belongs to radiation danger group B (there are a total of four, and the most dangerous is A), and this is rather serious. But what is most frightening here is something else. Given this kind of uranium enrichment, a spontaneous nuclear reaction is possible in the event of an aircraft disaster. To put it simply, an explosion.

Petr Lavrenyuk also did not exclude such a possibility. It is true he talked a lot about flight safety measures, about the reliability of the containers, and about how improbable it is for so many of the most diverse circumstances to coincide to bring about a chain reaction, but he could not entirely exclude the probability, albeit insignificant, that a UN-531 accident at the Moscow airport could lead to incredible consequences. In such a case, it would be more logical to land the aircraft with the uranium away from heavily populated places. Nothing of the sort.

The Iraqi's loaded the AN-12 at the airfield of the Al Habbaniyah military base, after organizing a powerful multilayered guard for this. Officials of our nuclear industry brought the containers directly to the country's main international airport. When I tried to get an explanation as to why specifically Moscow, Sheremetyevo-2, and not to a remote military airfield, I was told ingenuously: "Because there is a customs office there...."

Obedience to the law is touching. Except that, as specialists explained to us, the law in this operation was breached in every way. After delivering the uranium to a heavily populated area, the nuclear workers did not inform either the Gospromatomnadzor or the Ministry of Health, also setting aside the 1988 ukase of the USSR Supreme Soviet Presidium and IAEA documents, according to which inspection of this kind of material should be independent of the organization that is carrying out the development and use of nuclear energy in the country. The ministry was restricted many times by its own obedient departmental control. Therefore, incidentally, it is difficult to be confident that the containers that were transported on 15 and 18 November from the nuclear center in Iraq to Sheremetyevo-2 were not in some way more terrifying than "fresh" fuel from Uranium-235....

It is a strange time now: Union supervision over the games of the nuclear engineers seems not to exist any longer, but republic supervision has not been quite born yet. And who knows how many cargoes of this kind are still rattling around our civilian airports? For example, this is not known at Sheremetyevo-2 Airport. Even Boris Churkov, airport general director for security, got the information about UN-531's "stuffing" accidentally, from us.

"Apparently this was a military flight," he suggested, "and they transport everything imaginable through us, even an atom bomb. Who can check this out? After all, everything is classified...."

Observer Views Control of Nuclear Weapons

LD0912232191 Moscow Radio Moscow World Service in English 1910 GMT 9 Dec 91

[Commentary by military observer Colonel Vadim Solovyev]

[Text] The agreement the leaders of Russia, Belarus, and the Ukraine have signed to form a community of

independent states has again called attention to who is going to possess the nuclear weapons of the former Soviet Union. Here is an opinion from our military observer, Colonel Vadim Solovyev:

Nuclear weapons are deployed in Russia, Ukraine, Belarus, and Kazakhstan. Until now the leaders of these four republics have repeatedly said nuclear weapons must remain in the hands of the center, but the decisions that were adopted in Minsk raise some questions. Significantly, the leaders of former Union republics agree that the sovereign states that have come into being on the territory of the former Soviet Union must by no means undermine international agreements on limiting weapons, the destructive nuclear weapons in the first place. This is in the interests of republics themselves. Besides, this can help establish good relations with neighboring countries and clear the way for entry into the international community. Mind you, as soon as Ukraine proclaimed itself independent it stated full loyalty to the three non-nuclear principles not to have, not to import, and not to produce any nuclear weapons. Other republics are not pressing for the nuclear button, either.

On the other hand, in military and technical terms the common system of strategic nuclear weapons cannot be divided. If it is to continue functioning, it must be controlled by the center. No republic except for Russia, perhaps, can afford to maintain nuclear missiles, train personnel, let alone developing, testing or producing this kind of highly technological weapon.

A future for strategic nuclear weapons, among other questions, is discussed today by the State Council. The national president, Mikhail Gorbachev, and the presidents of the republics possessing nuclear weapons expect to adopt a final decision. On the meeting's eve, the Kazakh president, Nursultan Nazarbayev, said again that nuclear weapons had to remain under central control. It is certain all international commitments to reduce and get rid of nuclear weapons will be abided by, so will the unilateral strategic weapons initiative that President Gorbachev put forward last October.

Republic 'Ready' for Nonproliferation Treaty

LD1312231191 Moscow TASS in English 1716 GMT 13 Dec 91

[By UKRINFORM correspondent Sergey Bibik]

[Text] Kiev December 13 TASS—Ukraine stands for large-scale cooperation with the European Economic Community member-states and would like to join the European structures in the near future, Ukrainian President Leonid Kravchuk stressed during his talks with Christian Croner, ambassador of the Netherlands and an E.C. official.

The E.E.C. representative expressed his interest in the Ukraine's and the new Commonwealth's stand on strategic nuclear arms. According to Kravchuk, Ukraine is ready to join the Non-Proliferation Treaty and to eliminate it [as received] completely on its territory.

Nuclear Treaties To Apply to All Republics

*LD1212162391 Moscow TASS in English 1540 GMT
12 Dec 91*

[By TASS correspondent Lyudmila Yermakova]

[Text] Moscow December 12 TASS—"The treaty on non-proliferation of nuclear weapons and other multilateral international treaties and agreements of the Soviet Union, which applied to its entire territory, remain valid with regard to all republics that have ceased to be members of the union. This does not depend on whether they have reaffirmed their commitments under the treaties or not", the Soviet Committee for Constitutional Compliance stated in a resolution issued here on Thursday [12 December].

This decision was taken in view of the withdrawal of some republics from the USSR as well as a possible cessation of the existence of the union itself, a spokesman at the committee told TASS.

In this situation, a question arose about the validity of multilateral treaties, to which the USSR is a party, such as in particular the nuclear non-proliferation treaty and agreements on human rights, the spokesman explained.

'Drastic' Nuclear Arms Cuts Urged

*PM0512144091 Moscow NEW TIMES in English
No 45, 12-18 Nov 91 pp 18-20*

[Article by Aleksey Arbatov, director of the Center for Disarmament and Strategic Stability at the Foreign Policy Association of the USSR, and Thomas Cochrane, senior researcher at the Natural Resources Defense Council of the United States: "Finale Is Important, Not START [Strategic Arms Reduction Treaty]"]

[Text] Strategic Arms Reduction Treaty (START) was signed last July after many years of negotiations. The targets set in the Treaty can hardly inspire even optimists, however.

The slashing of the strategic arsenals of each of the two powers by the year 2000 from more than 10,000 nuclear warheads to 6,000 does not accord much with the widely declared aim of partnership. It can be repeated hundreds of times that Moscow and Washington no longer regard each other as enemies. The bipolar military confrontation will remain a fact, however, if the two powers continue to keep thousands of nuclear warheads aimed at each other.

Semi-Partners, Semi-Enemies

Since the nuclear missile potentials of the Soviet Union and the United States remain at high levels their missiles are aimed at each other simply because there are not so many targets in the rest of the world. The two countries do not have political or strategic reasons to attack each other, and are not expected to have such in the near future.

The White House and the Kremlin obviously see this contradiction, as is evident from President Bush's initiative and Mikhail Gorbachev's reply in September and October which proposes a faster arms reduction compared with that envisaged by START. It is a half-measure, however.

Washington proposed large-scale measures. One of them is elimination of all ground-based intercontinental ballistic missiles with independently targeted warheads which constitute up to 60 percent and about 20 percent of the total in the Soviet Union and the United States respectively. Simultaneously, Washington announced measures for dismantling and placing in depots nuclear arms from heavy bombers, lowering the degree of their take-off readiness, and removing old missiles to be scrapped from combat alertness (four percent reduction in the total amount of warheads).

Instead of going further, Moscow made only a timid half-step by proposing to cut the strategic arsenals of the two countries to 5,000 (not 6,000) nuclear warheads, remove nuclear weapons from bombers, and withdraw slightly more obsolete missiles, to be scrapped under the Treaty, from the state of combat alertness within a shorter time.

An Expensive Undertaking

In the next ten years it will not be easy to decide on taking deep cuts in the ground- and sea-based ballistic missiles. First of all, the processes of dismantling, elimination and conversion involved in the reduction of weapons are economically expensive and technically complex. Even cuts under START, modest by present standards, will require considerable expenditure.

Secondly, a sharp reduction in the number of warheads will call for a more drastic reduction in the number of carriers, for a large part of missiles have multiple warheads. As a result, the Soviet Union and the United States would retain a small amount of ground-based missile launchers and a considerably shrunken fleet. Mutual vulnerability would increase, thereby undermining strategic stability. The situation could be corrected by way of deploying missiles with monoblock heads instead of multiple warhead missiles with a large part of forces consisting of mobile launchers. It is a very expensive undertaking, however, and it will take much time to implement these measures. The Soviet Union, with its economy in a deplorable state, has little, if any, possibility of putting this idea into effect.

Lastly, a more drastic reduction would call for new talks and, since we are living in the nineties, it would overlap the time limits of START. The finished treaty would be put off again for the sake of a more attractive but unfeasible objective.

The Hidden Race

There is a way out nevertheless. During the nineties the strategic nuclear forces of the two powers could be reduced not to 6,000 or 5,000 but to 10 percent, to 1,000 warheads for each party, without undermining stability and national security and without additional excessive expenditure, without discarding START, which was worked out with great difficulty.

Signing START in the summer of this year, the two parties intended first of all to cut obsolete armaments while continuing to deploy new expensive systems (multiple-warhead missiles, heavy bombers, mobile land-based intercontinental ballistic missiles, both with monoblock and individually targetable heads). As a result, by the year 2000 the two powers would have cut their forces by 30 percent. However, they would have completely modernized them by enhancing their striking power. Moreover, they would have to spend money on the modernization of missiles, the elimination of old ones, and measures of control.

START does not at all envisage the reduction of nuclear weapons in this way. Another approach could be based on two principles. First, it is a qualitative exchange as regards destabilizing systems and, second, a broader use of the method of "unloading" ballistic missiles, that is, removal some of the warheads from the multiple warhead instead of eliminating missile carriers and their launchers.

Nuclear Stumbling Block

Mutual elimination of destabilizing systems. Moscow should at last agree to a reduction of heavy silo-based SS-18 missiles not by half, as specified in START (to 154 units), but to zero. These missiles, each carrying ten warheads of a megaton class, are a cold-war legacy. They are regarded in the West as silokillers, first strike weapons, particularly because they are not fit for a retaliatory blow since they will not "survive" in their silos. At present 104 SS-18 missiles are deployed in Kazakhstan and the rest 204 on the territory of the Russian Federation. They are produced at the Dnepropetrovsk missile plant in the Ukraine.

Strategic armaments of this type are like a stumbling block in the way of radical disarmament. They impel the United States to develop countersystems: 50 silo-based Peacekeeper missiles, each carrying ten warheads, and 96 Trident-2 ballistic missiles based on submarines. Trident-2 missiles, each carrying eight warheads, are deployed on four new submarines of the Ohio class. Thanks to their high accuracy they are intended to hit Soviet silos.

Soviet SS-24 missiles are similar to the Peacekeeper system. Ten of these missiles (the weapons are produced in Pavlograd) are based in silos in the Russian Federation and 46 in the Ukraine. They would have to be dismantled, too, especially since they are a tempting and vulnerable targets and are fit for the first strike only.

Thus, Moscow would dismantle two systems - 364 missiles (3,640 warheads) and Washington would do the same - 146 missiles (1,268 warheads). Moreover, it would give up plans of deploying 336 more Trident-2 missiles (2,688 warheads) on the other 14 submarines of this class.

The method of complete "unloading" (to zero) could help to withdraw much more quickly and cheaply all the obsolete ground-and sea-based missiles which were to be destroyed under the Treaty. Otherwise, the statements on their removal from the state of alertness cannot be verified. If the parties concerned detach all the warheads from these missiles and put them in storage, agree on additional procedures of control and thereby withdraw them from the nuclear balance, the dismantling of these missiles, silos and submarines could be effected over a longer period. This could be done with less expenditure, and the ways of using the systems for peace purposes could be thought out thoroughly.

The remaining advanced systems should be partially "unloaded." It will be a quick and cheap reduction of the number of warheads, and their concentration and vulnerability will decrease at the same time.

Generals Can Sleep Quietly

In 1995 the United States would have 940 ground- and sea-based missiles, 20 submarines and a total of 2,460 nuclear warheads. The Soviet Union would retain 1,146 missiles, 21 submarines and a total of 2,400 warheads in its strategic offensive arsenal.

In other words, by 1995 (instead of 2000) the two countries would have lessened their arsenals of warheads not by 30 or 50 percent, as Gorbachev proposed in October, but by 75 percent. Without breaking the asymmetry usual for the Soviet General Staff, the United States would have roughly 70 percent of its warheads on the sea and the Soviet Union—about 60 percent of its warheads on land. The Americans will traditionally retain slightly more warheads and the Soviet Union—a few more carriers.

All this can be achieved with less expenditure while strengthening stability and preserving the START structures. Besides, by combining unilateral and reciprocal measures the two parties could maintain the military strategic parity so dear to the hearts of brass hats. True, the vast programmes of modernization will have to be curtailed sharply, but in any case this will be required by the economic situation. Let the military-industrial complexes of the two powers put up with the present situation. The era of militarist bonanza is over.

It is necessary, of course, to weaken the restrictions on "unloading" which are specified in START for fear of uncontrolled "reverse loading." The system of control can be extended considerably. Let inspectors stay permanently at missile bases, airfields and ports. At worst, the two countries will have roughly equal opportunities for a reserve expansion (2,000 to 2,500 warheads and missiles from the stores).

The second stage, covering a period from 1995 to 2000, will call for START-2. There will be time to work out such a treaty in the first half of the current decade. The new treaty could be based on the principle of a further "unloading" of missiles, up to the complete removal of warheads from some portion of missiles. The missiles will remain in their positions while the warheads will be kept in stores under the permanent control of the other party.

When Missiles "Grow Thin"

As a result, the United States will retain 100 silo-based monoblock ICBMs of the type of "unloaded" Minuteman-3 or new, Midget-man missiles and 400 missiles in silos, but without warheads. Its naval force would consist of 18 Ohio-class submarines equipped with Trident-Is (or a missile of a new type), each with two warheads.

The Soviet Union would have 400 ground mobile SS-25 missiles, plus 250 silo-based SS-19 and SS-25 missiles "unloaded" to zero. The missiles on Typhoon submarines would have not four but three warheads each, while the missiles on 13 Delta-IV (Delfin) submarines could be "unloaded" from three to one warhead.

In all, the United States will have 18 submarines and 932 missiles in active service (including missiles with removed warheads), and 964 nuclear warheads in firing trim, whereas the Soviet Union will have 19 submarines, 978 missiles and 968 warheads. In other words, the strategic arsenals will be cut by 90 percent (in the number of warheads) while the number of carriers and warheads will be roughly one to one, that is, close to the ideal of stability. The opportunities for a "reverse" will be equal, too.

The reduction of the number of warheads below the 1,000 level is not only of symbolic but also of political-strategic importance. The nuclear weapons of the two countries will become comparable in their amount (while keeping a substantial "unloaded" reserve) with the forces of other nuclear powers. The bipolar nuclear confrontation will cease, and Moscow and Washington will be able to candidly say that they are no longer enemies or opponents in the strategic respect. The other nuclear countries could be drawn into the process of multilateral cuts.

And the last thing. Such measures are possible if strict restrictions are preserved on the deployment of strategic anti-missile defence, including ground- and space-based interception systems. For this reason Moscow's consent in October to devise a non-nuclear anti-missile system

seems to be a wrong decision (as if no one knew before that the Strategic Defence Initiative is a non-nuclear programme). The two powers have far more promising areas of cooperation, including cooperation in achieving the aims by which the "joint" anti-missile defence system is justified.

Officers Assure No Nuclear Arms at Garrison

OW0512183791 Moscow BALTFAX in English
1525 GMT 5 Dec 91

[Transmitted via KYODO]

[Text] According to the newspaper "Postimees", officers of the Tartu military garrison have issued a statement assuring residents of Estonia that there is no nuclear weapons on its territory.

The statement says allegations of Estonian deputy Yuri Liim that the garrison has nuclear weapons do not correspond with reality.

The garrison's Command is to hold a news conference for Estonian and foreign journalists on the issue December 8th.

Nuclear Weapons Talks With Ukraine Denied

Transfer of Warheads Alleged

LD0612141291 Moscow TASS International Service
in Russian 1258 GMT 6 Dec 91

[By TASS correspondent Andrey Naryshkin]

[Text] Moscow, 6 Dec (TASS)—The General Staff of the USSR Armed Forces has no information whatsoever on talks between the Center and the Ukrainian leadership on nuclear arms deployed on its territory. This is what Colonel General Bronislav Omelichev, first deputy chief of the General Staff, told the TASS correspondent. "I do not think there is a need at all to discuss issues of this kind," he added. The query was addressed to the General Staff following a report in the NEW YORK TIMES of 5 December. It said that USSR central authorities allegedly "started talks with the Ukraine on the issue of transferring control of 4,000 nuclear warheads to that independent state."

Shaposhnikov on Ukraine

OW0712003891 Moscow INTERFAX in English
0004 GMT 7 Dec 91

[Transmitted via KYODO]

[Text] The USSR Defense Minister Marshal Yevgeniy Shaposhnikov has said that the Ukraine still recognizes common defense space and aerospace borders, as well as the unity of nuclear forces. He believes that more talks on these issues are still possible. The Defense Minister has dismissed reports that President Kravchuk, of the

Ukraine, has asked the USSR Defense Ministry for a say in the control of nuclear weapons.

Kravchuk Reveals New Missile Command System

*LD0912190191 Moscow TASS International Service
in Russian 1822 GMT 9 Dec 91*

[By UKRINFORM correspondent Aleksandr Litvinov]

[Excerpt] Kiev, 9 Dec (TASS)—A news conference given by Ukrainian President Leonid Kravchuk today was devoted to the agreement on a Commonwealth of Independent States of Belarus, Ukraine, and Russia.

Acquainting journalists with the document, Leonid Kravchuk drew particular attention to the fact that the agreement does not envisage the creation of unified structures of administration, with the exception of a collective command of strategic forces.

The Ukrainian president explained that previously the president of the USSR has had the launch button at his disposal, but now a different system has been created. Now, in order for missiles to be launched, three buttons must be pressed simultaneously, each of which is under the control of one of the members of the Commonwealth. If one of them should press it, the launch will not take place: only three, and three simultaneously. [passage omitted]

Officer Discusses Chemical Weapons Destruction

*PM1612104791 Moscow KRASNAYA ZVEZDA
in Russian 13 Dec 91 First Edition p 3*

[Unattributed report on interview with Major General I. Yevstafyev, professor, doctor of technical sciences, and deputy chief of the USSR Defense Ministry Chemical Troops; place and date not given: "Will We Destroy the Chemical Weapons?"—first paragraph is editorial introduction]

[Text] Exactly one year remains until the date when we should start destroying our chemical arsenal under the appropriate Soviet-U.S. treaty. That treaty has not yet been ratified. But the problem of destroying chemical weapons will nevertheless face us in all its magnitude in the very near future. Are we ready to tackle this problem? Major General I. Yevstafyev, professor, doctor of technical sciences, and deputy chief of the USSR Defense Ministry Chemical Troops, discusses this with our correspondent.

No Matter How Costly, It Will Be Necessary To Destroy....

[Yevstafyev] Two Soviet-U.S. documents have been signed in the sphere of chemical weapons. The first is the Wyoming memorandum, which envisages a whole series of steps in the sphere of reciprocal information about the sides' chemical weapons, particularly weapons stocks. Such an exchange was carried out in 1990. We declared the quantity of toxic chemical agents in our possession

and gave full details about where they are stored and produced and the makeup of our chemical weapons in terms of types. The United States naturally did the same. Under the memorandum, reciprocal visits have been made to chemical weapons storage and production facilities. Moreover, Soviet and U.S. experts have visited chemical weapons destruction facilities.

On 1 June 1990 the USSR and U.S. Presidents signed an agreement envisaging resolute steps in the sphere of reducing the sides' chemical warfare potential. The USSR has 40,000 tonnes of toxic chemical agents, the United States 30,000 tonnes. Under the agreement both sides are committed to having no more than 5,000 tonnes of chemical agents each by the year 2002. This agreement has not yet been ratified.

But there is another factor which should not be forgotten. The multilateral disarmament conference in Geneva, as part of which talks on chemical disarmament are being held, is continuing its work. And whereas three-four years ago the possibility of elaborating an all-embracing convention not only banning the combat use, development, production, and stockpiling of toxic chemical agents, but also envisaging their mandatory destruction, would have seemed unrealistic, today its elaboration is making resolute progress.

According to expert assessments, the text of the convention could be elaborated in 1992. For it to come into force, the convention has to be ratified by 60 states. This could take two years. So its entry into force toward the end of 1994 is altogether probable. And this means that, one year on, the countries party to the convention should start the process of destroying chemical weapons.

But the question as to whether technical reasons are prompting us to destroy chemical weapons is a perfectly natural one. I would like to make things utterly clear here. The United States stopped producing them in 1967 and resumed doing so only in 1987, making a small quantity of binary chemical weapons. But they are not the significant thing here. That is to say, U.S. chemical weapons have been stored for at least 24 years. There is a second factor too. They differ from ours in design terms. The Americans have made more extensive use of light alloys in their types. They have somewhat different requirements regarding the soundness of the casing. This is fine from the standpoint of their effectiveness. However, U.S. chemical weapons are now in a such a state that the problem of destroying them is a pressing one. And 30-year-old weapons are hardly weapons any more. There are no more delivery vehicles. A bomb, after all, is developed for a specific type of aircraft, and a shell for a specific artillery system.

The Soviet Union wound up chemical weapons production in 1987. We have virtually no problems regarding storage safety. Some 12-16 million rubles [R] are required each year for the storage of toxic agents. This

outlay does not bear comparison with outlay on destruction. And we can store chemical weapons at least 30-40 years.

What, Then, Has Really Been Done?

In the second half of 1990 the USSR Defense Ministry began showing serious concern over the actual state of affairs and the technical basis for the fulfillment of this agreement. Chemical weapons are kept at ministry depots and bases and the ministry bears, if not legal, then at least moral responsibility for fulfillment of the agreement. No one in our country bears legal responsibility for the destruction of chemical weapons....

At the start of last year the USSR Council of Ministers made the decision to convert the installation in Chapayevsk, the only one in our country designed to develop chemical weapons destruction techniques. We have thus been deprived of a facility and therefore been unable to verify chemical weapons destruction techniques on an industrial scale. Given this, in March 1991 the USSR president ordered the Defense Ministry to finalize within two months the chemicals weapons destruction program, which had earlier been examined in USSR Supreme Soviet committees and commissions, and submit it to the Cabinet of Ministers. It was to examine it, draw up draft laws ensuring the implementation of the program, and appoint a state commission to determine the location of destruction facilities.

On 10 May the redrafted program was submitted to the USSR Cabinet of Ministers, where virtually no one has taken it up. It has to be bluntly said that the president's instruction has not been executed, nor have laws regulating chemical weapons destruction been drafted. Such laws do exist in the United States. They define who is responsible for the destruction of military toxic agents, who finances the program, how it relates to the country's security, and so forth.

A new spiral in the development of this problem has been observable as this year approaches its end. But no longer at the disintegrating Union level, but at the Russian level. Even earlier, deputies representing Russia and individual Russian officials were present during various discussions of programs and attended international conferences. We saw their interest, but saw no solutions. Then in November the first substantive briefing of Russian Supreme Soviet deputies on the chemical weapons destruction program took place. A report on the program was delivered on 27 November to a working conference in which deputies and chairmen of committees and commissions took part. This discussion could, it seems to me, lead to some practical steps.

We have for a long time now stated pretty clearly that the problem of chemical weapons, as distinct from the problems of other types of weapons of mass destruction, is a Russian problem. There are nuclear weapons on the territory of a few republics. Chemical weapons have been produced in Russia and they are also stored on its territory. It is difficult for me to say whether only Russia

will destroy these weapons or whether the republics of the former Union will take part in this work. At best it can be said that the destruction will be paid for out of the Union budget, if it exists. But you can scarcely count on any other participation. And given this, it follows that the commission choosing the destruction locations must be Russian. The laws must be Russian. The institutions and enterprises receiving contracts to carry out the work must also be Russian.

Where, Then, Are the Facilities To Be Constructed?

The program envisages three possible options. The first is to convert existing chemical weapons production plants into destruction plants. What is the advantage? These are state-of-the-art plants in terms of equipment. They certainly need to be reorganized and modified. But the basis is there: sources of power, purification facilities, personnel, and the right mental attitude on the part of the workforce there.

The second option is to destroy the chemical weapons at their storage sites. But there are implications here: Virtually all the chemical weapons storage sites are close to major population centers. They were created at a time when no attention was paid to these aspects. Moreover, cities are constantly growing and getting closer to the storage sites. And in our estimation, the risk of creating facilities at the storage locations is considerable. It substantially exceeds the risk involved in transportation. In our estimation, transporting chemical weapons is less dangerous than transporting chlorine, 30,000-40,000 tonnes of which "chug" along our country's railroads each year.

The third option is to select regions in the country which are remote from cities, populated areas, and rivers, but close to railroads and power installations. We have carried out such work, and a whole series of such regions can be identified in the country. But here too we will come up against a psychological barrier.

How is this problem to be resolved? I think the only way is to pass laws which lay down compensation for people for psychological damage. We are talking about a system of insurance. Risk has to be paid for. And if someone knows that he will receive compensation on agreeing to the siting of a facility, his reaction could be different. For example, we have been following very carefully how this is done in the world. In France nuclear electric power stations are sited in regions which are considered unacceptable for such construction in our country because of their population density. But the people there do not protest against nuclear electric power stations. Or take Nevada, for example: Its inhabitants are proud of the test range there, because, on the one hand, they know that everything is done to ensure their safety, while, on the other hand, the test site provides employment in Nevada.

According to prices at the start of 1991, the destruction of chemical weapons required R5.397 billion and \$146

million. Next year costs could rise to R28 billion. The sum will increase as time goes on as a result of the devaluation of the ruble.

But will we get anything out of the destruction of chemical weapons apart from cleansing our country of this lethal arsenal? Yes, the facilities set up to destroy chemical weapons can clearly be used to destroy toxic waste in 8-10 years' time after they have performed their tasks. We have more pesticides past their storage life in our country than we have chemical weapons.

Moreover we favor techniques which envisage destroying toxic agents by converting them into useful output for the national economy rather than incinerating them. For example, lewisite contains 20 percent arsenic. While the arsenic content at the deposit in Georgia, the sole deposit in our country, incidentally, is only 13 percent. By our estimates, R2.5 billion of the 5.4 billion earmarked for the destruction of chemical weapons could be recouped.

Ukraine To Destroy Nuclear Arms Within 7 Years

LD1412000391 Moscow Radio Moscow World Service in English 2300 GMT 13 Dec 91

[Text] Ukrainian Foreign Minister Anatoliy Zlenko has told his Bulgarian counterpart, Stoyan Ganey, in Sofia that Ukraine is going to destroy all the nuclear weapons on its territory within the coming seven years, and if other nations offer it material aid it will take it three to five years to destroy the nuclear hardware.

Chemical Weapons Supply Stockpiled in Country

LD1612133691 Moscow POSTFACTUM in English 2213 GMT 11 Dec 91

[From the "Military News" section]

[Text] The entire chemical weapons supply—around 40,000 tons of combat poisoning agents—is stockpiled in Russia's territory. The spokesman of the chemical troops' command does not rule out a possibility that under the present political conditions Russia will have to shoulder all the expenses of doing away with chemical weapons. In late-November at a working conference the chairpersons of committees and commissions of the Russian parliament were introduced to the program of destroying chemical weapons that the USSR had failed to implement. To date there is no information whether any specific decisions on the destiny of chemical weapons have been taken. The deputy chief of chemical troops of the USSR Defense Ministry Major-General Igor Yevstafiev maintains: Destruction of the Soviet chemical weapons' supply is a purely political action unconnected with any technical reasons. The Soviet Union discontinued their manufacture in 1987 and annually expended rbs [rubles] 12-16m [million] to store them. In such a way, the technical necessity of destroying the Soviet chemical potential could arise in 30-40 years' time only. Experts estimate that rbs 5.4bn [billion] and

US [dollars] 146m were needed early this year to implement the program of chemical weapons' destruction. In 1992 rbs 28bn might be needed to meet those goals because of inflation. Hard currency expenditure shall remain constant.

Deputy Seeks Data on Alleged Weapons Lab

92WNO174A Moscow IZVESTIYA in Russian 6 Dec 91 Union Edition p 7

[Article by V. Sbitnev, IZVESTIYA staff correspondent: "Siberian Ulcer Being Sought in Siberia"]

[Text] Mention in IZVESTIYA (No. 279) of the fact that a secret bacteriological weapons development laboratory had been relocated to a site near Irkutsk has alarmed Siberians.

Immediately after publication of a correspondent's report entitled: "I Know How the Siberian Ulcer Got to Sverdlovsk" Yu. Shevelev, a people's deputy in the Irkutsk city and oblast soviets, asked the oblast Federal Security Administration (FSA) Administration to clarify the matter.

A few days later he received an exhaustive reply which stated that "no information regarding the relocation of the laboratory to the vicinity of Irkutsk or its location anywhere within the territory of the oblast has been uncovered." True, the reply contained the caveats that, firstly, the FSA did not have the information which was of interest to the oblast population at its disposal and, secondly, Yu. Shevelev was advised "for the sake of clarity regarding this important matter" to send a deputy's inquiry to the USSR and RSFSR ministries of defense, as well as to the Russian Government.

Those disclaimers prompted the city's leaders to have serious doubts about the sincerity of the reply. At its latest session the Irkutsk Gorispolkom [city soviet executive committee] created a commission specially authorized to verify the report printed in our newspaper. The commission members include both deputies and representatives of the ispolkom. Professor M. Savchenkov, deputy chairman of the East Siberian Division of the Academy of Medical Sciences (Siberian Branch), was asked to head up the investigation. The authorities assume the medical personnel will have better luck than the intelligence officers did.

Reportage on 1979 Sverdlovsk Anthrax Event

Official on Inquiry Into Event

92400030A Moscow LITERATURNAYA GAZETA in Russian No 45, 13 Nov 91 p 2

[Report by LITERATURNAYA GAZETA correspondent for the Urals Natalya Zenova, under the rubric "Continuing a Topic": "Once Again on 'Military Secrets'"]

[Text] Yekaterinburg—LITERATURNAYA GAZETA was first in the country to conduct an independent investigation on the causes of the 1979 anthrax outbreak in Sverdlovsk. We maintained that this calamity took place not because of consumption of "infested meat," as the official version stated, but after an emergency discharge of substances related to biological warfare ("Military Secrets," LITERATURNAYA GAZETA, No. 34, 1990).

This topic was continued in one more article ("Military Secrets, Part II," LITERATURNAYA GAZETA, No. 39, 1991), which provided new arguments supporting the same conclusion.

On the basis of this newspaper's investigation, a deputy's inquiry was sent to the president of Russia. Boris Yeltsin assigned the handling of this problem, which produced serious international reverberations, to Aleksey Yablokov, state adviser on ecology and health care, corresponding member of the USSR Academy of Sciences.

This is what A. Yablokov told our correspondent:

"I will see to it that this matter is taken to its logical conclusion. The first step, which we have already taken, was to contact the KGB—let them dig into their archives and officially reply: 'yes' or 'no.' If 'yes,' if the military admits fault, then the issue is resolved in principle, and one of the main tasks that remains is to get more precise figures on the number of families that perished, and to determine the amount of monetary compensation. If 'no,' then a government commission will be created on the basis of the argued conclusions reached by the press."

"However, I would like to state right now, before the investigation of the Sverdlovsk emergency comes to an end: Our parliament should adopt a law that will make the development, production, and storage of biological weapons a criminal offense. A law of this kind was adopted in the United States last year. Also, this crime should be put in the category of those without a statute of limitations—that is, a crime against humanity."

Suspicious of BW Research

924P0036B Moscow KOMSOMOLSKAYA PRAVDA
in Russian 20 Nov 91 p 4

[Report by KOMSOMOLSKAYA PRAVDA correspondent V. Chelikov: "Plague in the Backyard: Has the USSR Stopped Developing Bacteriological Weapons [BW]?"]

[Text] Yekaterinburg—KOMSOMOLSKAYA PRAVDA has already reported more than once that Yekaterinburg students sent to harvest potatoes in the Krasnoufimsk Rayon are catching a strange disease. The first harvesting brigade ended up in a hospital more than three years ago, and the causes are still not clear. Then the illness spread beyond students and beyond Krasnoufimsk. Among the various explanations offered for the mysterious illness are suggestions that perhaps the students

were subjected to the effects of either chemical or bacteriological weapons. Especially considering that there already is such a precedent—the still unsolved outbreak of anthrax in 1979.

On 4 April 1979, Sverdlovsk emergency center started receiving the first calls. They were coming from the same area, and the symptoms described were the same: high—up to 41 degrees [Celsius]—fever, coughing, vomiting. Soon the departments of City Hospital No. 24 were filled to capacity and patients were being taken to the neighboring hospital, No. 20.

The initial diagnosis pronounced in the hospital was pneumonia. It was being updated; tests were being done. By evening it became clear, however, that the diagnosis was wrong—most patients were dying. They died suddenly, talking to the doctors succinctly and lucidly only minutes before death.

The next day a Voice of America [VOA] broadcast said that in violation of the 1972 convention, the Soviet Union was developing bacteriological weapons. The proof—the discharge of an anthrax strain at Military Base 19 in Sverdlovsk, as a result of which hundreds of people had already died and all of Sverdlovsk would soon be a dead city.

A.N. Solovyev, first deputy director of the Sverdlovsk city health services department, who was in the midst of the events from the very first day, maintains that at the time VOA broadcast this information the medics did not have a precise diagnosis yet. Test results arrived much later and partially confirmed the information broadcast on the short wave: People were getting ill with, and dying of, anthrax.

I do not know whether the regime of secrecy in the Soviet Union caused more inconvenience for anybody than it caused for the Soviet Union itself. Still, at that time, during the last years of the Brezhnev era and on the eve of the Olympic Games, which are prohibited from being held in a country with especially dangerous diseases—including the "Siberian plague"—under the shadow of the military-industrial complex, this whole incident was put under such secrecy that the city was immediately rife with the most incredible rumors.

There were good reasons for that. It was markedly noticeable that the disease had struck the area located to the south of the military base. This was also the direction of the wind prior to the incident. People living nearby maintained that they saw the discharge in the form of a pink cloud that rose behind the high fence sometime between 1700 and 1800 hours the day before. There were rumors that there were uncountable corpses on the base itself, as well as next to it. It is indeed true that an almost entire shift from the ceramics plant that is located next to the military object was taken to the hospital. Rumors affected the medics, too: having received assurances from Base 19 that the military had nothing to do with the

incident, they started responding to calls in plague-protection suits and gas masks. Relatives were refusing to take and bury the dead.

As a means of destruction, anthrax is one of the most effective. In its natural form, skin anthrax is most common. People contract it through contact with infected animals. In its intestinal and lung form, the mortality rate is 80 to 100 percent. The lung variety is most suitable for use as a weapon. The incubation period is very short—six to eight hours, death is instantaneous, and transmission from person to person is unlikely. The main problem is the means of dispersion and of subsequent cleanup, since in natural conditions the "Siberian plague" is not carried by air, but can remain in the soil for decades.

In 1979, the overwhelming majority of patients were dying from the lung variety, resulting in swift death.

To liquidate and to establish the cause of the outbreak of anthrax in Sverdlovsk, a government commission arrived; it was headed by a deputy minister of health, USSR Chief State Physician-Hygienist P.N. Burgasov.

A station was set up at Hospital No. 40; all patients even remotely suspected of having contracted "the Siberian plague" were brought there. For treatment, in addition to the usual medications, live anthrax vaccine was delivered from Tyumen. But since Russians have always believed that it is better to overdo than not do enough, a mass vaccination of the population was instituted.

More than 3,000 Sverdlovsk residents were vaccinated. Senior medical school students were drafted to go door-to-door and implement preventive measures. Some were dismissed from school for refusing to fulfill their physician's duty. Frightened by the panic, students were simply afraid to go into the nidus of infection, despite knowing that the disease was not transmitted by human contact. Nobody was certain, however, that they were dealing with the same disease that was described in the textbooks.

The all-out immunization did play a certain positive role. However, in the words of the above mentioned Solovyev, this positive is nullified by the death of seven people caused by the universal inoculation. During the autopsy on these people, in addition to the main virus, a virus from the vaccine was detected—which accelerated the illness and led to death. Aleksey Nikolayevich says that even then he spoke against the vaccination, went to the former first secretary of the former CPSU obkom [oblast committee] B. Yeltsin, and later wanted to write a dissertation under a disguised and soft title, "The Disadvantage of the Vaccine." The obkom dismissed his exhortations, and also advised him against writing a dissertation....

Two months later, the epidemic was over; according to official data, it took 64 lives. Sverdlovsk did not have a crematorium then, so they were buried in the clay soil of the Eastern Cemetery, chloride of lime was poured all

around the burial site. Now this place is marked with a red cross on all city development maps, so that even many years later no work will be done here, lest death is released again.

The official version of the incident, published in the *ZHURNAL MICROBIOLOGII, EPIDEMIOLOGII, I IMMUNOBIOLOGII* (1980, No. 5) and signed by Professors I. Bezdenezhnykh and V. Nikiforov, blamed everything on private enterprise. Allegedly the farmers started the mass slaughter of infected cattle. That allegedly the meat, again on a mass scale, was being sold on the farmers market. Thus, in addition to everything, a class underpinning was put to the incident.

Actually, there was indeed infected meat. In this case the Sverdlovsk procuracy displayed an amazing perspicacity and operational swiftness. Having gone through the chain of persons selling and buying meat, it zeroed in on a man who had slaughtered a cow dying of the "Siberian plague." Two other cows belonging to the same owner turned out to be infected, too. The cow carcasses were burned, the man was investigated by the organs. Otherwise, no other mass slaughter or respective mass sales of meat was discovered. It was strange even to suppose that the farmers would suddenly start slaughtering their few remaining cows in the spring (!), and all of this went unnoticed by various watchdog services. But even had it indeed happened, the infected meat could not cause the lung variety of the "Siberian plague."

It seems that the government commission itself did not particularly believe in the version presented to it. Otherwise, why would Burgasov insist on treating affected areas from the air, washing roofs with a soapy solution and caustics, and laying asphalt (to cover contaminated soil). All of this only reinforced the opinion of Sverdlovsk residents that blame should be laid on the emergency at Base 19. So what kind of a base was it?

I have in my possession the reply of former USSR Minister of Defense D. Yazov to the inquiry from deputy of Kravets of the Yekaterinburg City Soviet, dated 2 June 1990. The minister writes: "Said object in Sverdlovsk is a structural subunit of the Scientific-Research Institute of Microbiology of the USSR Ministry of Defense—the sector of military epidemiology. This institution is engaged in researching methods for antibacteriological protection of troops and the population; in particular, they are developing methods for disinfecting areas of habitation, military equipment, and armaments and facilities, as well as means of protecting people from biological aerosols and of rapid detection of harmful substances in the environment." Further on in the letter, D. Yazov mentions the official version of food contamination.

There is one more puzzle in the letter. Dmitriy Timofeyevich writes: "Pathogenic microorganisms are not used in the work of the sector." And three paragraphs later: "In developing vaccines, the institute's laboratories did not have in their possession the quantity of

pathogenic material that could have caused the contamination of the environment and through that of the people." Do you not agree that there is quite a difference between "not used" and "not possessing such a quantity"?

For clarification, I went to the deputy chief for science of Base 19, candidate of technical sciences Colonel G. Arkhangelskiy. He said that what they use in their work are mostly imitators of biological aerosols. Sometimes, however, and with great precautions, they use microdoses of pathogenic organisms. In 1979, the base was developing a vaccine against anthrax. They were not brought into the efforts to liquidate the outbreak. Despite the fact, said Col. Arkhangelskiy, that at that time the base specialists could have provided substantial help to the city. Now they themselves would like to know what actually happened.

There are facts, however, that indicate that the base had nothing to do with the epidemic. For instance, the version of a weapon discharge (at least, in finished form) does not hold water. In 1979, over 500 were hospitalized, but only 64 died. Naturally, it simply does not make sense to make a weapon of such low effectiveness.

There could be the possibility of a discharge of an unfinished vaccine, specially activated for use as an effective antidote in combat conditions. But, first, are there ways to activate a vaccine? Second, and this is most important, why did the infection spread over such an enormous area, covering not only the vicinity of the base, but also the chemical machine building plant, the Elisavet settlement, and the oblast's Sysertskiy Rayon?

Thus, the cause of the outbreak is still not known. Only one thing can be said with certainty—a new epidemic of anthrax could start in Yekaterinburg at any moment. The reason for that is the improper liquidation of the consequences of the 1979 epidemic. I want to remind that the anthrax bacillus may remain in the soil for decades. It is hard to eradicate it, even if the entire area is burned out. It will simply submerge several centimeters into the water and survive.

Perhaps, we should look into the recent past for the cause of the strange disease striking students in Krasnoufimsk fields?

The investigation continues.

Krasnoyarsk Plutonium Plant To Shut Down

924P0032A Moscow IZVESTIYA in Russian
14 Nov 91 Union Edition p 6

[Article by TASS correspondent Yu. Khots especially for IZVESTIYA: "Underground AES [Nuclear Electric Power Station] Will No Longer Produce Plutonium"]

[Excerpt] This is the first report from the closed city not far from Krasnoyarsk. The underground nuclear station of the Krasnoyarsk mining-chemical combine is situated

here at a depth of 250 meters. The station is in a subsiding condition—"running out." Its complete halt is a result of the initiative of the top leadership of the USSR and Russia to stop the production of fissionable materials.

The concrete road that stretches along the shore of the Yenisey leads to a tunnel situated at the base of an enormous mountain. It started to be laid in the 1950's, when the government made a decision to construct uranium graphite reactors for the production of U-239, and, to put it in a more straightforward way, material for atom bombs. In those days, the principle of building such facilities deep under ground began to be implemented.

It was believed at the beginning of the 1950's: Enemy aircraft will not reach the center of Siberia. Well, in fact, this underground facility is not threatened by anything today either, even a nuclear strike. According to all drafts, the facility is supposed to work in wartime as well. The 250-meter stone roof reliably covers the entire unit from above. The tunnels themselves have several widened areas that are capable of suppressing a shock wave that rushes into them. Water, which is necessary to such a "broth," is right nearby—there is plenty of it in the Yenisey.

And so we are at the end of our long journey. On the way, we estimated: Approximately as much cement was used in finishing off the tunnels as would be required for one more Krasnoyarsk hydroelectric power station. There is an atomic reactor at the bottom of each of the huge artificial "caverns."

"The first two reactors are doomed," says Pavel Morozov, the combine's deputy chief engineer who is escorting us. We will stop one at the beginning of July 1992, and the second—within a year or two. The matter is more difficult with the third machine. When we stop it, we will be left without heat and energy immediately. It serves to heat a city of almost 100,000, the steam turns the generators of the electric power station.

We enter the office of Vladimir Kibo, the chief of the station.

"Starting from the moment that I came here 30 years ago as a graduate of an institute, I heard one thing—we are performing important work. Our former minister said from the stage in the House of Culture: 'Your combine was started, and the scale in the international arena became balanced. Because of our nuclear weapons, we are free.' And it is only now, probably, that we are beginning to understand that the resources directed at the manufacture of plutonium could be used for other work," explains Vladimir Nikolayevich.

"I think that our secrets did not last for a long time," Pavel Morozov said, joining the conversation. "There are interesting proposals on international cooperation.

For example, French specialists are prepared to supply apparatuses for the measurement of neutrinos. Unfortunately, a resolution of this question is being delayed. But I am confident: Life will win out. Our specialists have begun to go abroad. Several years ago, we did not even dream of this! The proposed arrangement of especially pure production—gallium arsenide—will certainly lead to the fact that we will be forced to open our steel gates.”

“This material is used for the manufacture of an elemental base in electronics. In the United States, for example, a program has been developed for its production estimated at \$2 billion. But at the Krasnoyarsk nuclear facility, it can be produced by investing far less resources. Next year, it is planned to obtain the first samples here, which in purity have no equal in our country....” [passage omitted]

GERMANY

Genscher on USSR Weapons

*AU1512171091 Cologne Deutschlandfunk Network
in German 1000 GMT 15 Dec 91*

[Interview with Foreign Minister Hans-Dietrich Genscher by Hans-Joerg Krieger on 15 December; place not given—recorded]

[Excerpt] [passage omitted] Regarding the Soviet Union, there is the additional problem of nuclear weapons. This problem does not exist in Yugoslavia. We have an elementary interest in getting an absolute guarantee for the control of the nuclear weapons. We think that in addition to this control, the short-range nuclear missiles and nuclear artillery must be destroyed without delay both in the West and in the former Soviet Union because they are weapons systems that are difficult to control. Strategic weapons are no less dangerous but they are easier to control.

However, I would like to draw public attention to two other points that I consider equally dangerous. First, there is the danger in the military area that nuclear weapons could get into the wrong hands, and there is the danger that the know-how involved in the production of nuclear weapons and other weapons of mass destruction could get into the wrong hands and minds. We discussed the problem with the Soviet Union, the problem as to how to prevent experts on the production of nuclear, chemical, and biological weapons from being hired by other countries.

Germany will develop an initiative regarding the control of the transfer of know-how on the production of weapons of mass destruction. Under our laws, such transfer of know-how is a punishable offense. We think that it should also be punishable under international law.

Second, there is the danger in the area of nuclear reactors, the safety of nuclear power plants for civilian use. The standard is disastrous. The state of the nuclear reactors is even substandard, and many reactors are not even checked for safety. That, too, is a problem that concerns the international community. Here we would also like to see common, coordinated action.

[Krieger] You addressed the danger of the transfer of know-how. How can you guarantee that Soviet scientists and nuclear experts will not pass on their know-how to countries like Iraq, for instance?

[Genscher] National laws and international conventions that envision sanctions against countries that are trying to procure such know-how could help guarantee this. I would like to make it quite clear that we consider it necessary for the peoples' coexistence that the possibilities of action by the international community regarding the enforcement of elementary security requirements be enlarged.

That is why I advocate creating an international court to take action against those responsible for offensive wars, environmental wars, and the production of weapons of mass destruction.

The international community must be allowed to intervene where there is the danger that weapons of mass destruction are proliferating. In this respect, it is not just very late, but we are directly facing a situation where proliferation cannot be undone. To me it is one of the most important challenges of this time, and the disintegration of the Soviet Union should be a reason to act. [passage omitted]

Politician Warns Soviet Nuclear Weapons Danger

*LD0812213491 Berlin ADN in German 1905 GMT
8 Dec 91*

[Text] Halle (ADN)—Norbert Gansel, Social Democratic Party defense policy spokesman, has warned of the possibility of a nuclear war in the Soviet Union. "If in the next few weeks there are six to seven nuclear powers in the territory of the former Soviet Union, then the danger of a nuclear war cannot be ruled out," the politician told the MITTELDEUTSCHER EXPRESS (Monday [9 December] edition), which is published in Halle.

Gansel therefore demanded that a system of collective security should be created within the framework of the CSCE. The control of Soviet nuclear weapons is of crucial importance in this. In view of the crisis in the USSR, the threat posed by Soviet nuclear weapons cannot be overstated.

Police Detain Smugglers of Arms Into Croatia

*LD1312104491 Belgrade TANJUG in English
1920 GMT 12 Dec 91*

[Text] Bonn, Dec 12 (TANJUG)—The Regensburg police announced today that five persons, who intended to smuggle a large quantity of arms into the Yugoslav Republic of Croatia, had been detained.

Police have not yet identified them, but said that the group comprised two Germans, two Arabs and a Croat. They are now held on a pretrial confinement.

The statement also said that anti-aircraft missiles, about 3,000 submachine guns "Kalashnikov" and a large amount of ammunition have been seized.

The arms allegedly came from some African countries and should have been shipped to Croatia via Poland and Czechoslovakia.

SPAIN

Mistral Missiles To Be Purchased From France

LD1412181891 Madrid TVE Internacional Television
in Spanish 1930 GMT 13 Dec 91

[Excerpts] The Council of Ministers met today and approved several important legislative measures. [passage omitted] Among them was the decision to purchase 800 Mistral antiaircraft missiles from France for 15 billion pesetas. [passage omitted]

UNITED KINGDOM

King Cites New Dangers of Proliferation

92WP0090A London THE DAILY TELEGRAPH
in English 23 Nov 91 p 10

[Article by William Weekes and Roger Highfield: "King Warns of Soviet Atom Weapon Mercenaries"]

[Text] Fears that the break-up of the Soviet Union could lead to some of her nuclear scientists being tempted by lucrative salaries to countries developing their own nuclear weapons were raised by Mr. King, Defence Secretary, in the Commons yesterday.

He expressed concern about the dangers of nuclear proliferation during a debate on nuclear defence. There was also anxiety about the control of nuclear arsenals in former states of the Soviet Union.

His fears were echoed by an expert on the proliferation of nuclear weapons yesterday who said that former nuclear weapons personnel should be monitored to ensure they did not become nuclear mercenaries.

In the Commons, Mr. King, drew attention to scientists working at "atomic cities" created under the old centralised structure of the Soviet Union.

"Now there are atomic cities and there are armaments cities as well," he said.

"These cities come under the responsibility of ministries of the Soviet Union which may themselves be abolished, or may be in the process of being abolished, and may soon lack the resources to maintain those cities," he said.

"There is a risk then as to where those personnel may actually be going, personnel who may have very particular skills and capabilities which could be very much in demand with certain other parts of the world."

He said 15 countries possessed the means to deliver a nuclear warhead by ballistic missile, and the number was soon expected to rise to 20, including Pakistan, India, Libya, Iraq and Iran.

Mr. Paul Leventhal, distinguished visiting fellow at Cambridge University's Global Security Programme, an academic unit studying broad international security issues, said: "There are thousands of people who have classified knowledge about the design of nuclear weapons and how to produce the materials required for nuclear weapons, namely enrichment and reprocessing."

It was vital for U.S. and Soviet authorities to co-operate to police former nuclear personnel.

The irony of Mr. King's statement yesterday is that Britain helped to train the most prominent scientist in Iraq's multi-billion pound nuclear weapons programme, Dr. Jaafar Dhiah Jaafar, a former research associate of Imperial College, London.

Dr. Jaafar, now the vice-president of the Iraqi Atomic Energy Commission, came to Imperial College in 1971 as a post-doctoral fellow after studying at Birmingham University.

The UN has taken a close interest in Iraq's personnel because it needs to ensure that, after all the equipment and paperwork for Iraq's weapons programme is destroyed, it cannot be restarted through the knowledge of thousands of skilled individuals.

Starting from scratch, they could in theory rebuild the programme within five years. Their names are now in the possession of the UN.

The Iraqis were almost exclusively reliant on foreign-trained specialists, said a spokesman from the International Atomic Energy Agency in Vienna. Britain, Germany, France, eastern Europe and the Soviet Union have trained Iraqi scientists at their universities.

Britain had been "quite prominent" in training personnel for Iraq's nuclear programme, said the agency.

The Universities Statistical Record shows that last year there were 290 Iraqi undergraduates and postgraduates. The figure in 1980 was 1,331.

British training has not only aided Iraq's nuclear weapons programme; any Iraqi who studied the fields of organic chemistry and biochemistry in the UK could have turned his hand to developing chemical weapons for Iraq.

EC Envoy To Seek Ukraine Nuclear Reassurances*AU0912163391 Paris AFP in English 1617 GMT
9 Dec 91*

[Text] Maastricht, The Netherlands, Dec 9 (AFP)—The European Community (EC) is to send an envoy urgently to the breakaway Soviet republic of Ukraine to seek reassurances about its nuclear weapons, a Dutch diplomat said here Monday [9 December].

Speaking on the sidelines of an EC summit on political and economic union, he said Dutch Ambassador Christian Kroner would fly to the Ukraine on Thursday and report back to EC ministers in Brussels next Monday.

Finland's Nuclear Decision May Influence Germany's*92WP0076A Helsinki HUFVUDSTADSBLADET
in Swedish 12 Nov 91 p 6*

[Article by Henrik [last name missing]: "Finnish Decision on Nuclear Power Hot Issue for German Industry"]

[Text] Erlangen—The decision on whether or not to build a fifth nuclear power plant in Finland—a decision due to be made next year—is by no means an internal Finnish affair.

Certainly it is the parliament which will finally decide the matter, but its decision will affect not only Finnish energy supplies but also the entire European nuclear power industry.

Since the accident in Chernobyl in 1986, it has not been politically opportune in Europe to order new nuclear power facilities. From that standpoint, a Finnish order for a new facility would have a favorable influence on areas of public opinion that are becoming more friendly to nuclear power again.

A visit to the head office of the new European nuclear giant NPI [Nuclear Power International] in the Bavarian city of Erlangen confirms the notion that the Finnish decision is being awaited with particularly great interest.

Nuclear Power International is a firm that came into existence in 1989 when Germany's Siemens and France's Framatome combined their resources. In all, the NPI has built about 100 nuclear power plants in various places around the world, chiefly in the home countries France and Germany. The nuclear power plants built by that market leader have a total output of no less than 100,000 megawatts.

The NPI is one of three corporations which submitted firm bids at the end of October to build the fifth nuclear power plant in Finland. The other two are Sweden's ABB-Atom and the Soviet Union's Atomenergosexport.

"The real competition is between ABB-Atom and the NPI. If Finland chooses the Soviet alternative, it will be

for other reasons," said Adolf Huettl, a member of the Siemens board of directors and managing director of the nuclear power division.

Of the total of seven reactor types being offered, the NPI is offering four: pressurized water reactors with either 1,100 or 1,400 megawatts for Lovisa and boiling water reactors with the same output for Olkiluoto outside Raumo.

ABB-Atom is offering boiling water reactors of two types—1,170 or 1,350 megawatts—for Olkiluoto. The Russian alternative is a 1,040-megawatt pressurized water reactor to supplement the two smaller reactors on Hastholm Island in Lovisa.

Strict German Standards

If Imatran Voima, Industrial Power, and Perusvoima choose the NPI, Siemens will have overall responsibility. The NPI's deputy managing director, Friz Ruess, estimates that Finnish industry's share in the production of components would amount to about 50 percent.

"German safety regulations and the design of the reactor suit Finnish requirements better than the French ones would. That is why the Siemens design was offered to Finland," said Fritz Ruess.

He points out that safety regulations vary by country and are therefore difficult to compare. But German requirements, like the safety requirements in the Nordic countries, are unquestionably the strictest in the world.

"The safety requirements concerning the release of radiation and serious near-accidents at German power plants are even stiffer than Finland's rules, which are internationally recognized as being strict," said Ruess.

As a matter of interest, it can be mentioned that the German facilities are designed to withstand both earthquakes and air crashes. The safety philosophy is based on the idea that the most serious and most improbable accidents could occur.

If a serious accident occurs, an computer-based safety system automatically takes over, giving the operating personnel 30 minutes in which to plan other measures.

"The 30-minute rule applies to German nuclear power plants. We are convinced that that well-tested computer system is more reliable in a sudden crisis situation than a human being, who may not know immediately what needs to be done," said Ruess.

The corresponding period in the United States is 20 minutes, while in France it is 10 minutes. The trend in all cases is to lengthen the time that the automatic safety systems are in control.

No One Willing To Invest in Old East German Power Plants

The strictness of German regulations is proven not only by closer acquaintance with German facilities but also by the fact that no new facilities have been built.

Without political consensus, the power plant giant Siemens is not venturing or is not willing to make any new investments in nuclear power plants.

For the same reasons, no one has lifted a finger to start up the facilities in the former GDR. Those plants have been shut down not because they are unable to operate but because they do not meet German safety standards.

"No one wants to invest money in those facilities as long as there is still no certainty that they can be made to satisfy all the standards," said Ruess.

Last week, however, Siemens management criticized the EC for wanting to do no more than investigate the shortcomings of East European nuclear power plants. Siemens feels that it is high time to pass from words to action and to improve the safety of those facilities which, by Western standards, ought to be shut down.

There are also examples in the former FRG of facilities whose operating permits have been revoked. The reprocessing plant in Wackersdorff is an empty shell. The German nuclear power industry invested about 2.5 billion [currency not given] in that facility before it was stopped. The result is that all of Germany's high-level nuclear fuel waste is processed, very expensively, at French and British facilities.

But the Germans themselves have to handle the final storage of their nuclear waste.

Social Democrats in Key Role

There are currently 21 functioning nuclear power plants in Germany, 10 of them in the 1,400-megawatt class. Nuclear power accounts for one-third of the country's electricity production. Coal from German mines is the other important source of energy.

As a result of the Chernobyl accident, there was solid opposition to nuclear power in Germany during the final years of the 1980's. New projects for Siemens' nuclear

power business could only be found a long way off—in Argentina and Brazil, for example.

Now there are clear signs that public opinion in Germany is changing. The politicians have agreed that the greenhouse effect should be counteracted by reducing releases of CO₂ by 25 percent by the year 2005. People in the industry say that is not possible without more nuclear power.

The coalition parties—the CDU [Christian Democratic Union] and the FDP [Free Democratic Party]—have already come out in favor of more nuclear power. But for the nuclear power industry, that is not enough.

"Expansion requires political consensus," said Ruess of Siemens.

He does not expect support from the Greens, but that makes the attitude of the Social Democrats all the more important.

A nuclear power plant takes half a decade to build and costs about 10 billion Finnish markkaa. The nuclear power industry is not going to run the risk of building a plant which may not receive an operating license for political reasons if there is a change of government.

It can therefore be said that the SPD [Social Democratic Party of Germany] is in a key position on the issue of nuclear power in Germany. At a party convention following the Chernobyl accident, the SPD passed a resolution opposing nuclear power and calling for its eventual phasing out. The SPD has stuck to its policy, but there are those who think the Social Democratic Party would be forced to reconsider its energy policy if it became the government party again.

Nor is energy policy itself a simple equation in Germany. The very fact that the coal industry employs 130,000 people whose average age is only 33 years means that no quick changes are to be expected.

Despite that, the Finnish decision on nuclear power will have wider consequences than perhaps our decision-makers would like. This is also shown by the international appeal not to build a fifth power plant which the Finnish parliament received a couple of days ago. The nuclear power industry and nuclear power's opponents both realize that the Finnish decision will mark a turning point.